United States Department of Agriculture

Soil Conservation Service

In cooperation with United States Department of the Interior, Bureau of Land Management, and University of Nevada Agricultural Experiment Station

Soil Survey of Pershing County, Nevada, East Part

How To Use This Soil Survey

General Soil Map

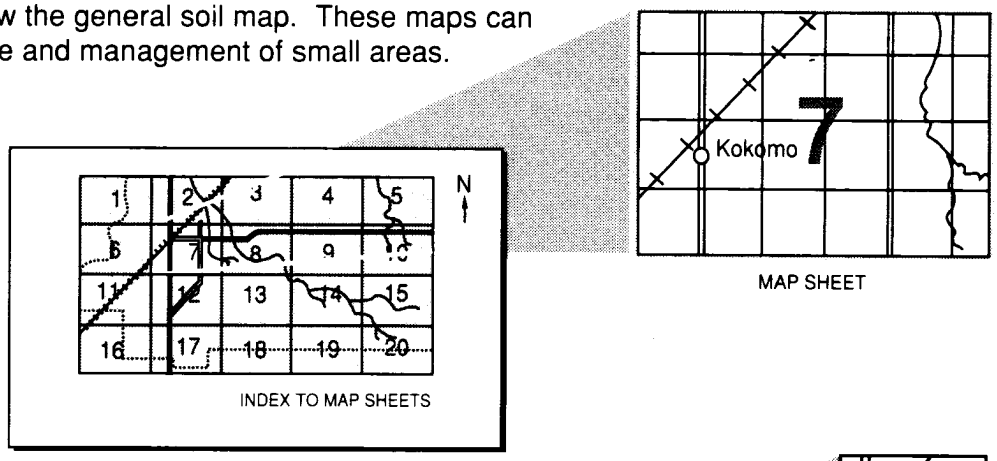
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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

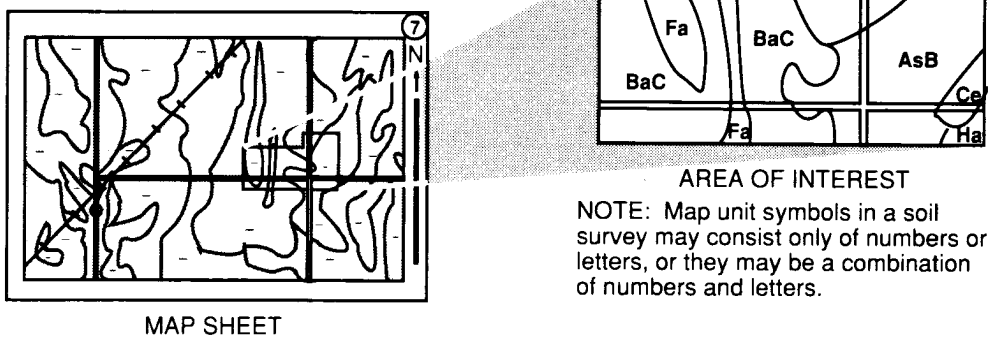
Detailed Soil Maps

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

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



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



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

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

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

Major fieldwork for this soil survey was completed in 1982. Soil names and descriptions were approved in 1986. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This survey was made cooperatively by the Soil Conservation Service; the United States Department of the Interior, Bureau of Land Management; and the University of Nevada Agricultural Experiment Station. It is part of the technical assistance furnished to the Big Meadow Conservation District.

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

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Cover: A typical landform sequence in the southern part of Grass Valley facing the west slope of the Tobin Range. Dun Glen soils are on fan skirts in the foreground. Adelaide, Orovada, and Snapp are the dominant soils on the fan piedmont remnant in the middle of the picture. Reluctan, Roca, and Wiskan are the dominant soils on the hills in the background on the right, and Layview and Tusel are the dominant soils on the far mountains.

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Foreword

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

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

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

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

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Soil Survey of Pershing County, Nevada, East Part

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United States Department of Agriculture, Soil Conservation Service,
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This survey area is in the north-central part of Nevada (fig. 1). It is bounded on the north by Humboldt County, on the east by Lander County, on the south by Churchill County, and on the west by the western part of Pershing County. It has a total of 1,965,973 acres, or 3,072 square miles. Lovelock and Winnemucca are near the survey area but are outside of it.

The survey area consists of numerous north-south oriented mountain ranges and valleys. Elevations average 8,500 feet in the mountains and 4,300 feet in the valleys.

All of the public land in the survey area is administered by the Bureau of Land Management.

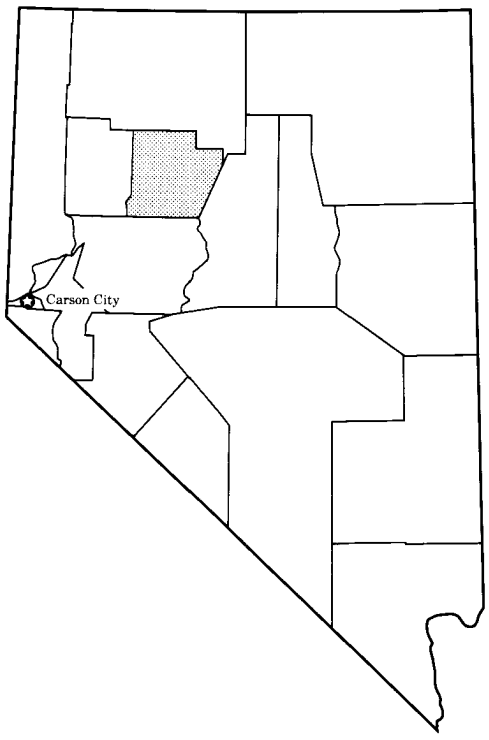

Figure 1.—Location of Pershing County, east part, in Nevada.

General Nature of the Survey Area

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

History

The earliest inhabitants of the survey area are estimated to have arrived about 10,000 to 12,000 years ago. During the relatively dry climatic period between 7,000 and 4,500 years ago, the area was either

sparsely populated or abandoned. General reinhabitation began about 4,500 years ago.

In 1828, when fur traders arrived, the Northern Paiute Indians occupied the area. The first immigrants settled in 1841, following the Humboldt River west from its source. Trains of immigrants continued crossing the northern edge of the area until the 1870's.

During the period of immigration, traders established themselves along the Humboldt River. Large-scale settlement began in the early 1860's, after silver ore was discovered in the Humboldt and East Ranges.

Ranching and agriculture developed in the period 1860-70. Large livestock operations were established in the area by the late 1870's. Agriculture, both livestock and crop production, still is important in diversifying the economy.

Water Supply

The major source of irrigation water in the survey area is the Humboldt River. A few wells have been drilled, but they furnish only a small part of the total water supply. At the higher elevations, numerous small springs and seeps and several small perennial streams provide water for livestock and wildlife. Wells and streamflow provide water in the valleys, where there are few springs and the streams generally are intermittent. The ground water in the valleys varies in quality, and the amount available for irrigation has not been determined. Wells or dependable springs provide water for domestic uses in rural areas.

Industries and Transportation Facilities

The main industries in the survey area are ranching and mining. The ranches are dominantly cow-calf enterprises, and the current year's calves are generally sold in fall. A few herds of sheep graze in the area in summer.

The survey area has been mined since the mid-1800's. It has the State's largest tungsten, antimony, and iron mines as well as economically significant mercury, gold, silver, lead, and copper mines. The Eugene Mountains have one of the largest known tungsten deposits in North America.

Geothermal steam reservoirs capable of generating commercial electricity have been discovered in the northern part of Dixie Valley and northeast of Rye Patch Reservoir.

Ongoing explorations are taking place in the survey area for such mineral resources as gold, silver, copper, and barite and for oil, gas, and geothermal steam.

The survey area is sparsely inhabited and thus has few improved roads. Most of the area is accessible by dirt roads or jeep trails. Interstate 80 runs in an east-west direction along the northern edge of the survey area. State Highway 50 runs south in Buena Vista Valley from Interstate 80 to Unionville.

The survey area is served by two railroads, which parallel the Humboldt River. Most of the minerals mined in the area are shipped by rail.

Drainage

Most valleys, or bolsons, in the survey area are internally drained. Surface drainage is restricted in the valleys by the bounding mountains and by the lower hills or alluvial divides on the other two sides. The bolson floor in this type of drainage basin is ephemerally flooded. Buena Vista playa is the most prominent example of a bolson floor in the survey area. The Humboldt River drains the western and northern parts of the survey area. It flows in a southwest direction in the northwestern part of the survey area.

Geology

The diverse geology of the survey area ranges in age from Cambrian to Holocene *(10)*. The rock types include intrusive and extrusive igneous rocks; sedimentary rocks of biologic, clastic, and chemical origin; and various low- and high-grade metamorphic rocks. Three major pre-Cenozoic episodes of folding and thrust faulting have structurally mixed the rock units in many areas *(10)*. Cenozoic volcanism and later large-scale vertical faulting have obscured many of the older features. They have contributed to the present basin and range topography. Basin alluvial deposits are among the most extensive features in the survey area.

Most bolsons contain alluvial fill several thousand feet thick. The uppermost sequence of sediments consists of Quaternary alluvial deposits on the mountain flanks and lake deposits on the valley floors *(10)*. It is made up of a wide variety of materials occurring both as mixtures and as distinct, fairly homogeneous bodies. The lithology of the bounding mountains helps to determine the composition of the valley fill material and of the soils that subsequently form in the basins.

Lake sediments on the valley floors are typically fine textured deposits of Pleistocene age *(10)*. Many of these deposits, such as those in the Buena Vista Valley and the Humboldt River Valley, formed during the time of Lake Lahontan, the largest Pleistocene pluvial lake in the Great Basin. The major mountain ranges in the survey area are the East, Tobin, and Humboldt Ranges.

Sandstone, chert, limestone, dolomite, siltstone, and conglomerate make up most of the sedimentary Paleozoic and Mesozoic rock units within the East Range *(10)*. The relationship between these rock units has been greatly complicated by three episodes of

extensive thrust faults. Two of these occurred in the Paleozoic era and one occurred in the middle Mesozoic era. Granite Mountain, at the south end of the range, is made up of two intrusive complexes. One of these is Triassic leucogranite, which makes up the south half of the mountain. The other is Tertiary granodiorite, which forms the northern part *(10)*. Quaternary basalt covers some of the upland parts of the range. High-angle vertical faults cut most of the rock units.

The Tobin Range consists mainly of late Paleozoic and early Mesozoic sedimentary rocks *(10)*. The Paleozoic rocks belong to the Havallah and Pumpernickel Formations. They consist of limestone, dolomite, and quartzite that have been completely folded and faulted. The early Mesozoic rock assemblages are similar to the Paleozoic rocks, but they include a significant amount of metavolcanic rock types. A thick sequence of rhyolite and andesite is in the lower third of the range. Quaternary basalt flows are around the southern margins of the range *(10)*. High-angle normal faults have resulted in a steep, abrupt relief in the Tobin Range.

The Humboldt Range is made up predominantly of complexly folded and faulted Triassic rock units *(10)*. The older units occur as a mixed assemblage of rhyolite and tuffaceous sediments. Two younger units occur as a sequence of limestone, dolomite, sandstone, and siltstone. All of the units have been folded and overturned during thrust faulting and have intrusions of rhyolite and leucogranite. Rocky Canyon granodiorite of Cretaceous age is a more recent intrusive feature. Quaternary basalt crops out at both the north and south ends of the range *(10)*.

Climate

In this survey area, summers are hot, especially at the lower elevations, and winters are cold. Precipitation is normally light at the lower elevations during all months of the year. At the higher elevations, precipitation is much heavier and snow accumulates to considerable depths. Much of the snowmelt irrigates crops in the nearby valleys.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Lovelock, Nevada, in the period 1951-80. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperatures at Imlay, Lovelock, and Winnemucca are 34, 35, and 32 degrees F, respectively. The average daily minimum temperature is 21 degrees at Imlay, 22 degrees at Lovelock, and 19 degrees at Winnemucca. The lowest temperature, which occurred at Winnemucca on December 9, 1972, is -34 degrees. In summer the average temperature is 72 degrees at Imlay and Lovelock and 68 degrees at Winnemucca. The average daily maximum temperature is about 89. The highest recorded temperature, which occurred at Imlay on July 17, 1959, is 112 degrees.

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

The total annual precipitation is about 7 inches at Imlay, 5 inches at Lovelock, and 8 inches at Winnemucca. Of this, 45 percent usually falls in April through September. The growing season for most crops falls within this period. The heaviest one-day rainfall during the period of record was 1.58 inches at Winnemucca on October 24, 1951. Thunderstorms occur on about 14 days each year.

The average seasonal snowfall is about 7 inches at Imlay, 3 inches at Lovelock, and 25 inches at Winnemucca. The greatest snow depth at any one time during the period of record was 10 inches at Winnemucca. On an average of 1 day at Imlay and Lovelock and 13 days at Winnemucca, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year. Every few years a blizzard strikes the survey area. Even at the lower elevations, snow remains on the ground for many weeks.

The average relative humidity in midafternoon is about 35 percent. Humidity is higher at night, and the average at dawn is about 65 percent. The sun shines 80 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the west. Average windspeed is highest, 9 miles per hour, in spring.

Soil Landscapes

The mapped areas in this soil survey generally represent associations of two or three soil components and other included soils of limited extent. Soil patterns commonly coincide with landforms and physiographic positions. In the section "Detailed Soil Map Units," descriptive terms are used to identify where the individual soil components occur on the landscape. Landforms and soils are related, but they are not mutually exclusive. Individual soil series commonly occur on more than one component landform.

In this survey area the landforms are classified and defined in a manner precise enough to show where the

CHART 1.—CLASSIFICATION OF BOLSON LANDFORMS

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Bounding mountains				
Piedmont slope	Mountain valley fan	Erosional fan remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Ballena			Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Alluvial fan	Fan collar	Channel	
	Fan piedmont	Erosional fan remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
		Fan apron	Channel	
		Nonburied fan remnant	Channel	
		Beach terrace		
	Fan skirt		Channel	
		Beach terrace		
Basin floor (bolson floor)	Alluvial flat	Relict alluvial flat	Channel	
		Recent alluvial flat	Channel	
	Sand sheet	Sand dune (Parna dune)	Interdune flat	
	Beach plain	Offshore bar		
		Barrier bar		
		Lagoon	Channel	
	Lake plain	Lake plain terrace	Channel	
	Playa	Flood plain playa	Channel	

soils occur in relation to each other *(16)*. This section does not define all of the landform terms, but it briefly defines the main geomorphic surfaces in the survey area. All landform terms are defined in the "Glossary."

The landforms of the intermontane basins are first grouped in two general classes—bolson (fig. 2) and semibolson (fig. 3). Within these two groups, three major physiographic parts are identified (fig. 4). These are the bounding mountains, the piedmont slope, and the basin floor. The bounding mountains rise more than 1,000 feet above the surrounding boundaries. They differ from hills, which are defined as highland masses that rise less than 1,000 feet above the surrounding boundaries. The piedmont slope and basin floor are topographic forms that extend from the bounding mountains down to a central playa.

CHART 2.—CLASSIFICATION OF SEMIBOLSON LANDFORMS

Landforms			Parts of landforms	
I Major physiographic part	II Major landform	III Component landform	IV Landform element	V Slope component
Bounding mountains				
Piedmont slope	Mountain valley fan	Erosional fan remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Ballena	.....	.....	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Alluvial fan	Fan collar	Channel	
	Fan piedmont	Erosional fan remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
		Fan apron	Channel	
		Nonburied fan remnant	Channel	
	Fan skirt	.....	Channel	
Basin floor semibolson floor)	Alluvial flat	Relict alluvial flat	Channel	
		Recent alluvial flat	Channel	
		Basin-floor remnant	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope
			Partial ballena	Crest
				Shoulder slope
				Back slope
				Foot slope
			Channel	
		Inset fan	Channel	
	Sand sheet	Sand dune		
	Axial-stream flood plain	Flood plain playa	Channel	
		Stream terrace	Summit	
			Side slope	Shoulder slope
				Back slope
				Foot slope

The shapes, genetic relationships, and geographic scales of the topography seen in the field are used to classify the landforms. The two general classes—bolson and semibolson—are successively divided into smaller and genetically more homogeneous classes (charts 1 and 2). The broadest class is major physiographic parts, each of which is made up of several genetically related major landforms. These landforms in turn may

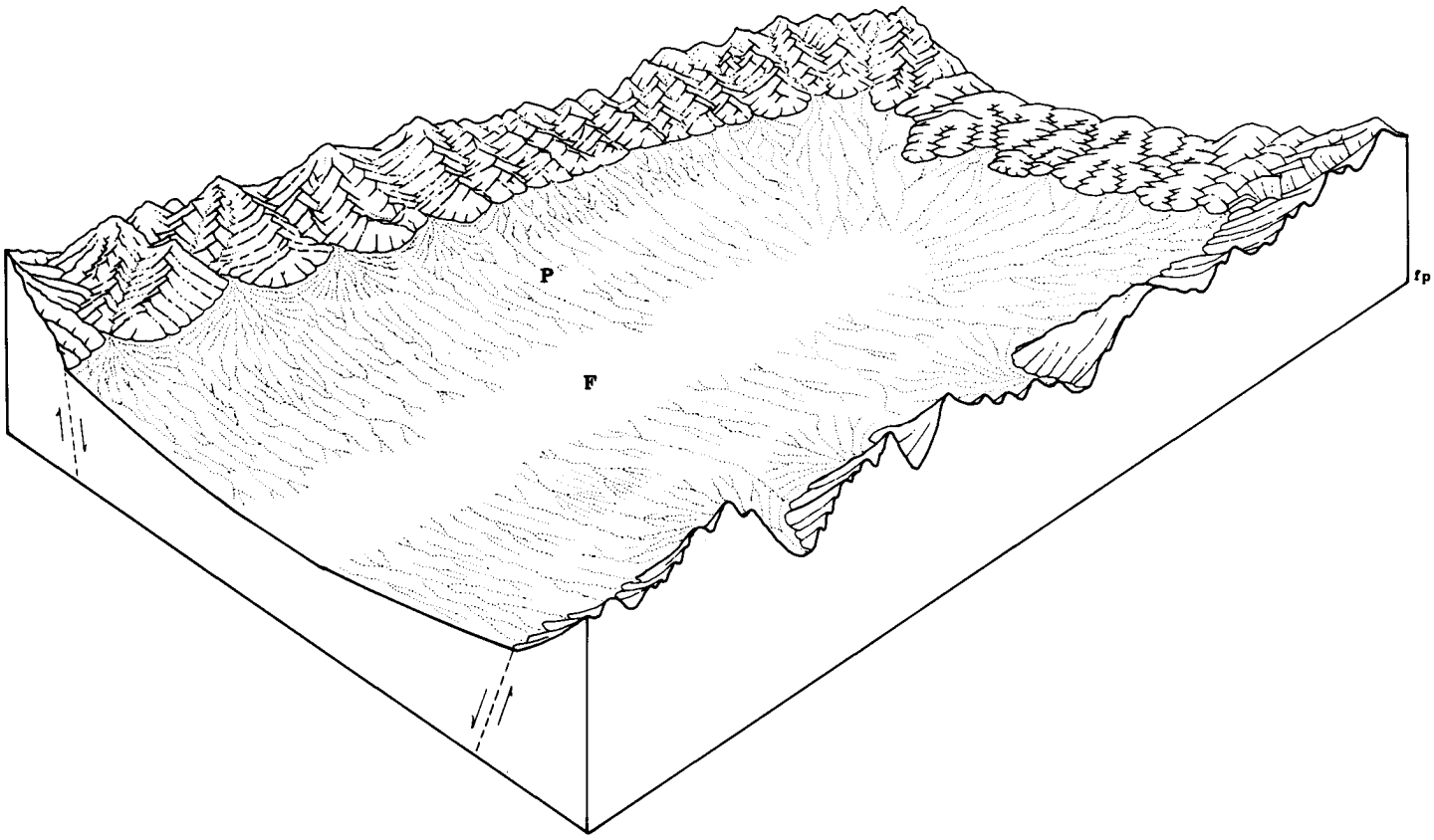

Figure 2.—The major physiographic parts of an internally drained intermontane basin, or bolson: the piedmont slope (P), and the basin floor, or, more specifically, the bolson floor (F). This drawing shows part of an elongated bolson that has bounding mountain ranges on the near and far sides and is cut off by hills on the far end. The drainageways, shown by dotted lines, suggest positions of major landforms. Neither the playas nor the drainageways on the floor are shown.

consist of several genetically related component landforms. The component landforms are the smallest single units considered in combined terms of their form, constituent materials, and genetic history. Some component landforms, such as fan piedmont remnants, have distinctive topographic parts with quite different geomorphic histories. These parts are called landform elements. The landform elements that are erosional surfaces are subdivided into slope components.

In the section "General Soil Map Units," landscape positions are given for each of the major components. These generally are major physiographic parts, major landforms, or component landforms. In the section "Detailed Soil Map Units," broad landscape positions are given for each map unit in the description of map unit setting. These are major physiographic parts or major landforms. More detailed landscape positions also are given for each major component and contrasting inclusion in the map unit. These generally are component landforms, landform elements, or slope components.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unmodified parent material in which the soil formed. The unmodified material is devoid of roots

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

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size, and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, 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

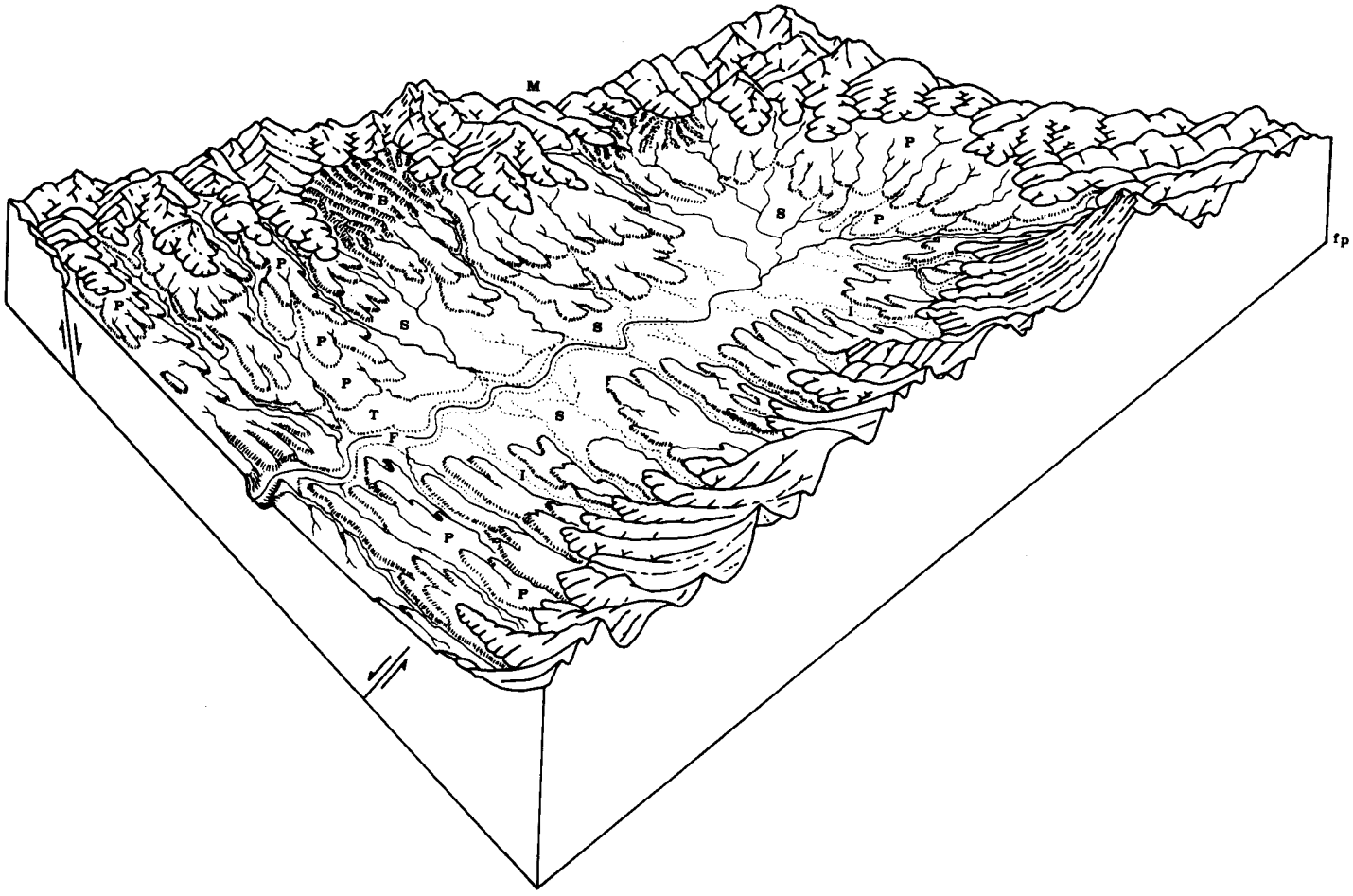

Figure 3.—A semibolson that displays the effects of several cycles of dissection and deposition. The major landforms are a ballena (B); fan piedmonts (P), comprising several levels, or ages, of fan remnants; fan skirts (S); an axial stream terrace (T); and an axial stream flood plain (F). Alluvial fans are not distinguished from fan piedmonts. Component landforms of inset fans (I) are between fan remnants. The basin is bounded on two sides by mountains (M).

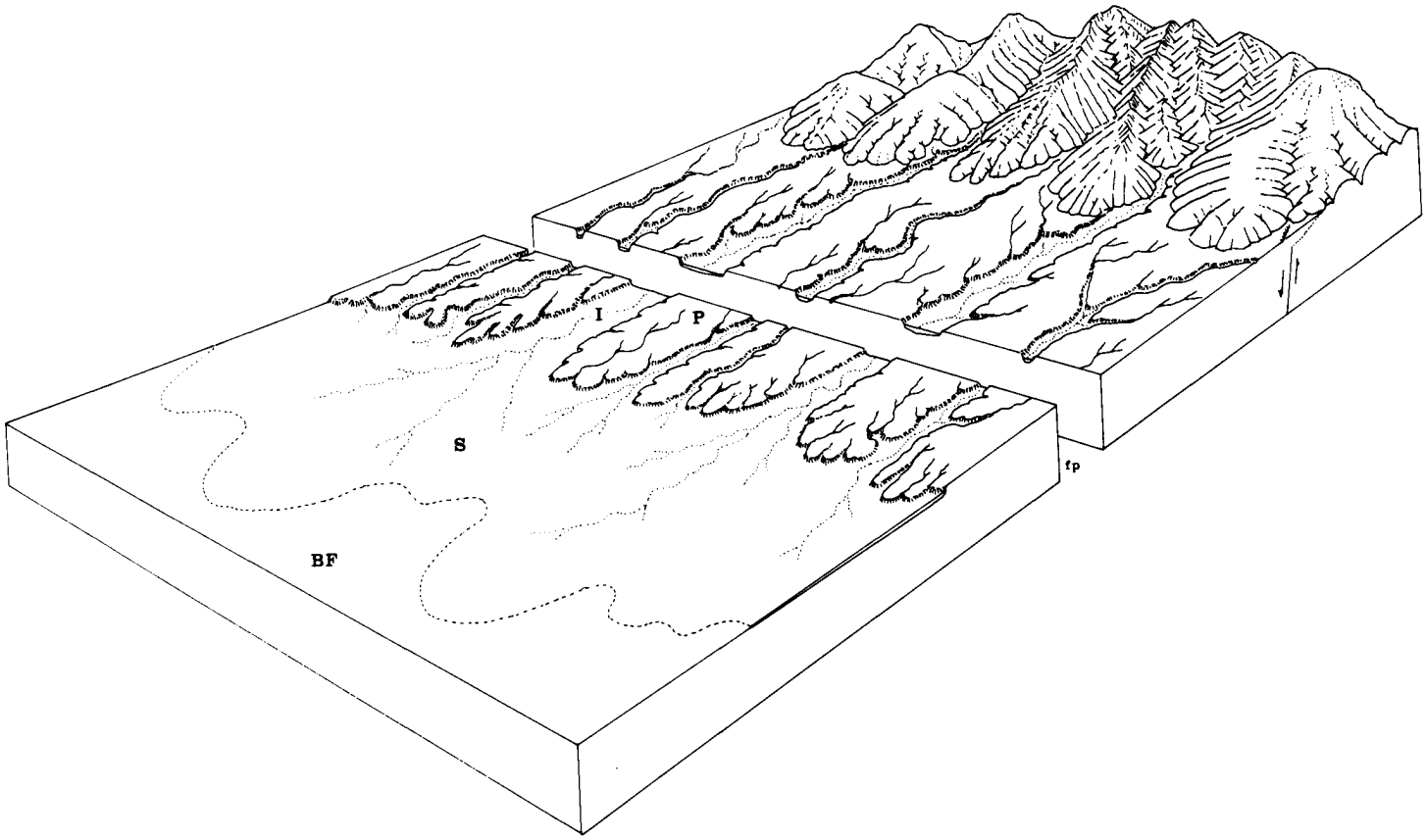

Figure 4.—A fan skirt (S) that merges along its lower boundary with a basin floor (BF) and that was formed by coalescing alluvial fans originating at gullies cut in a dissected fan piedmont (P) and by debouching inset fans (I) of the fan piedmont. The erosional fan piedmont remnants and mouths of the inset fans form the upper boundary of the fan skirt. The skirt is the same age as the inset fans but is younger than the relict summits of the fan remnants. It may be the same age as or younger than the surface of the basin floor, but as shown here it is younger because its alluvium overlaps the surface of the basin floor.

taxonomic classes. 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.

Some of the typical pedons of the soils in this survey area are located in the eastern part of Humboldt County because a large part of Pershing County was mapped in an older survey of the Sonoma area, which included parts of Humboldt and Pershing Counties *(22)*. For the soils that were already mapped in the older survey and were not mapped again in the current survey, the description of the typical pedon already available has been used regardless of the survey area in which the pedon occurred. The series description of these soils includes a statement indicating that the pedon is in Humboldt County. In some pedons taxa are in map units that are similar to but are not exactly the same as units in this survey area.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are

developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

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

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

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas, especially where this survey area joins the Lovelock area. Differences are the result of a better knowledge of soils, an improved methodology of mapping, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas. These differences do not significantly affect the use of this survey.

General Soil Map Units

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

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

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

Figures 5 and 6 show how the general soil map units relate to the various broad landscapes. The map units in figure 5 are representative of those on a bolson that is an internally drained intermontane basin. The map units in figure 6 are representative of those on a semibolson that is an externally drained intermontane basin.

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

Map Unit Descriptions

Areas Dominated by Soils on Bolson and Semibolson Floors

This group consists of five map units. The soils in this group are dominantly on alluvial flats, flood plains, lake plains, lake plain terraces, and sand sheets *(16).* Elevations are 3,800 to 4,600 feet. The average annual precipitation is 4 to 8 inches, the average annual temperature is 48 to 52 degrees F, and the frost-free period is about 100 to 130 days.

1. Playas

This map unit is on level bolson floors in the sink areas of Buena Vista and Buffalo Valleys. The areas are barren of vegetation. In most years water is ponded in these areas following spring runoff.

This map unit makes up about 2.5 percent of the survey area.

This map unit consists of nearly impermeable lacustrine sediments that are veneered with fine textured sediment and sandy eolian material.

This map unit is not suited to most uses.

2. Wendane-Sondoa-Preble

Nearly level, very deep, somewhat poorly drained and well drained soils on lake plains, lake plain terraces, and alluvial flats

This map unit is in the Buena Vista, Buffalo, and Dixie Valleys. The vegetation is mainly big saltbush and black greasewood on Wendane soils, shadscale and black greasewood on Swingler soils, and black greasewood on Preble soils.

This map unit makes up about 6 percent of the survey area.

Wendane soils are somewhat poorly drained and are on lake plains. They have a thin, light colored, medium textured surface layer and a medium textured and moderately fine textured subsoil. They are strongly salt and sodium affected. They are occasionally flooded.

Sondoa soils are well drained and are on lake plain terraces. They have a light colored surface layer and are medium textured throughout. They are moderately salt and sodium affected. They are not subject to flooding.

Preble soils are somewhat poorly drained and are on alluvial flats. They have a thin, light colored, medium textured surface layer, which is underlain by moderately fine textured material. They are strongly salt and sodium affected. They are not subject to flooding.

Of minor extent in this map unit are nearly level, small playas in concave areas. These areas have a crusted surface layer. They are strongly salt and sodium affected and do not support vegetation.

This map unit is used for livestock grazing and wildlife habitat. The main limitations are the low average annual precipitation and the salt- and sodium-affected soil profiles.

3. Mazuma-Swingler-Bluewing

Nearly level to moderately sloping, very deep, somewhat excessively drained to moderately well drained soils on lake plain terraces, lake plains, and beach terraces

This map unit is in the Buena Vista, Lovelock, and Jersey Valleys. The vegetation is mainly shadscale in moderately salt- and sodium-affected areas of Mazuma soils, black greasewood and seepweed in strongly salt- and sodium-affected areas of Mazuma soils, black greasewood and shadscale on Swingler soils, and shadscale and bud sagebrush on Bluewing soils.

This map unit makes up about 13 percent of the survey area.

Mazuma soils are well drained and are on nearly level lake plain terraces. They have a thin, light colored, medium textured surface layer, which is underlain by gravelly, medium textured to coarse textured material. They are moderately and strongly salt and sodium affected.

Swingler soils are moderately well drained and are on nearly level lake plains. They have a light colored surface layer and are medium textured throughout. They are strongly salt and sodium affected.

Bluewing soils are somewhat excessively drained and are on nearly level to moderately sloping beach terraces. They have a thin, light colored, very gravelly, moderately coarse textured or medium textured surface layer and a very gravelly, coarse textured subsoil.

Of minor extent in this map unit are Yobe and Isolde soils. Yobe soils are somewhat poorly drained and are on nearly level lake plains. Isolde soils are excessively drained and are on moderately sloping sand dunes. Yobe soils support big saltbush, and Isolde soils support fourwing saltbush and Indian ricegrass.

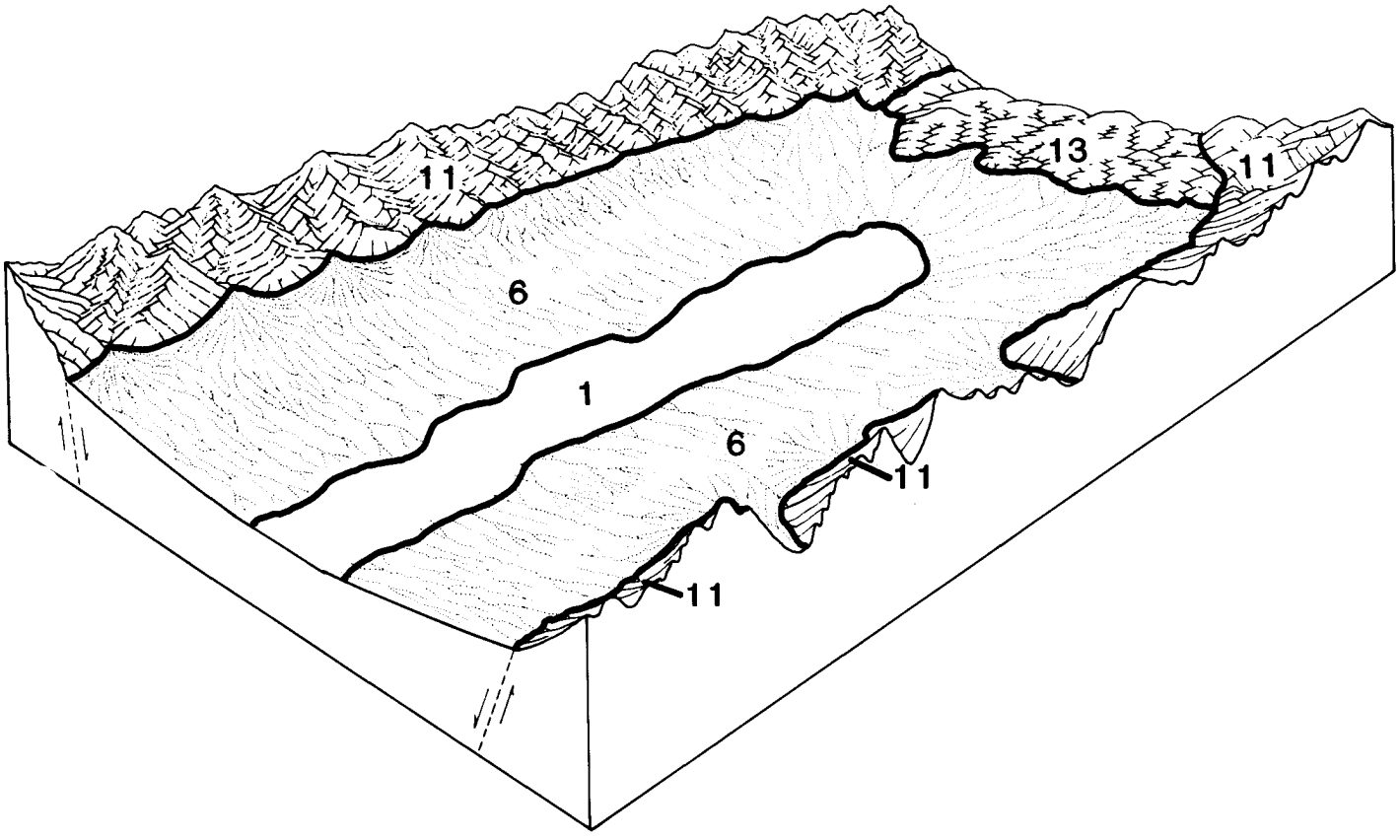

Figure 5.—General soil map units representative of those on a bolson that is an internally drained intermontane basin. These units are 1—Playas; 6—Jerval-Dun Glen-Tenabo; 11—Reluctan-Roca-Iver; and 13—Puffer-Mulhop-Xine.

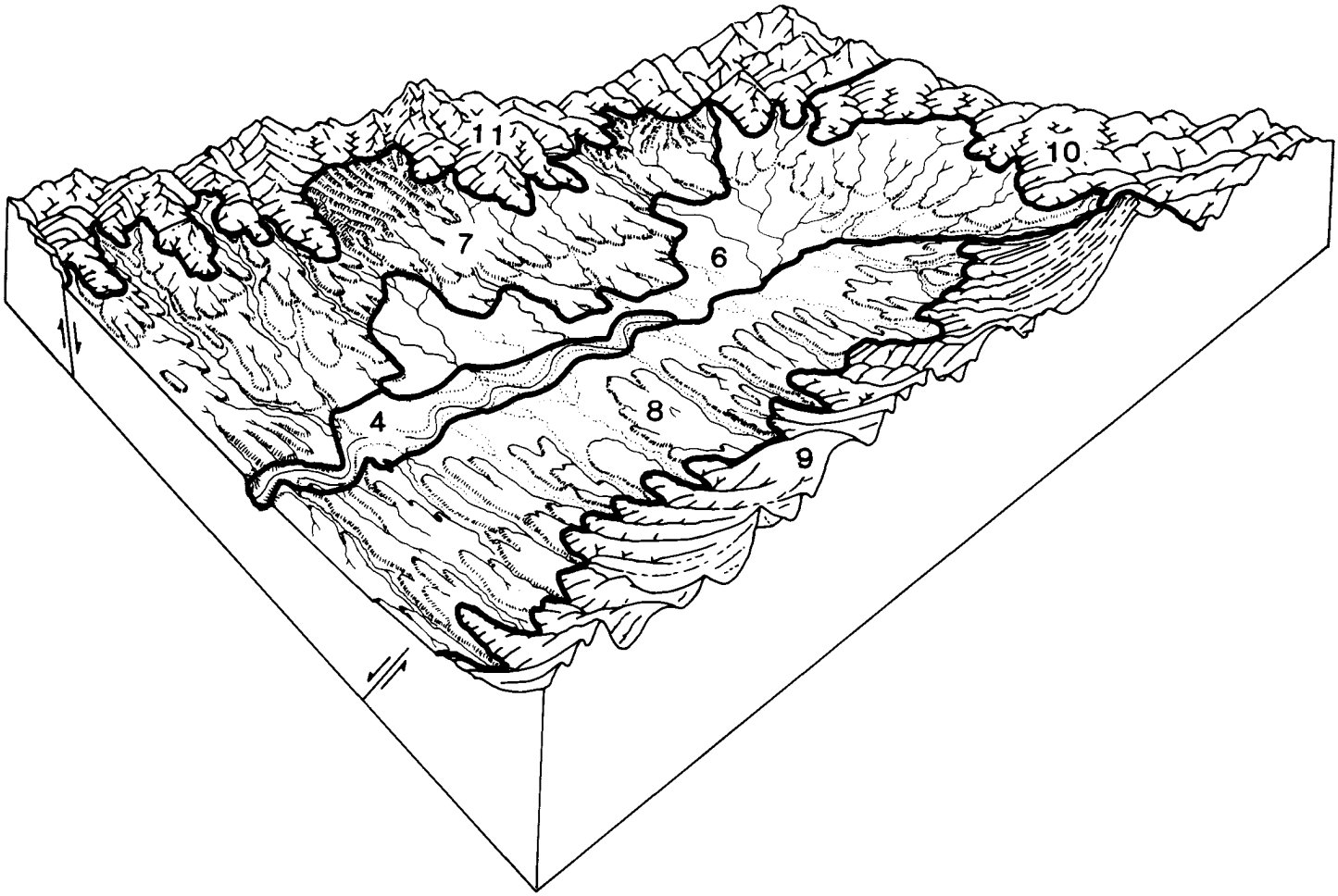

Figure 6.—General soil map units representative of those on a semibolson that is an externally drained intermontane basin. These units are 4—Humboldt-Sonoma-Sondoa; 6—Jerval-Dun Glen-Tenabo; 7—Chiara-Cortez-Orovada; 8—Jerval-Misad-Knoss; 9—Theon-Singatse; 10—Trunk-Burrita-Hoot; and 11—Reluctan-Roca-Iver.

This map unit is used for livestock grazing and wildlife habitat.

4. Humboldt-Sonoma-Sondoa

Nearly level, very deep, poorly drained, somewhat poorly drained, and well drained soils on flood plains and lake plain terraces

This map unit is on the flood plain along the Humboldt River. The vegetation is mainly basin wildrye, willow, alkali sacaton, and inland saltgrass on Humboldt soils; black greasewood and basin wildrye on Sonoma soils; and black greasewood and seepweed on Sondoa soils.

This map unit makes up about 1 percent of the survey area.

Humboldt soils are poorly drained and are on flood plains. They have a thick, dark colored, moderately fine textured surface layer and a stratified, moderately fine textured and fine textured subsoil. They are slightly salt and sodium affected. They are frequently flooded.

Sonoma soils are somewhat poorly drained and are on the outer margins of flood plains and low stream terraces. They have a medium textured surface layer and a stratified, medium textured and moderately fine textured subsoil. They are strongly salt and sodium affected. They are subject to rare flooding.

Sondoa soils are well drained and are on lake plain terraces. They have a thin, light colored, medium textured surface layer and a medium textured and moderately fine textured subsoil. They are strongly salt and sodium affected. They are not subject to flooding.

Of minor extent in this map unit are Pocker Variant soils on nearly level flood plains. These soils support

willow, creeping wildrye, and basin wildrye.

This map unit is used mainly for meadow hay, winter grazing, and wildlife habitat.

5. Hawsley-Benin

Nearly level to moderately sloping, very deep, excessively drained and well drained soils on sand sheets and lake plain terraces

This map unit is in the Buena Vista Valley. It is adjacent to Rye Patch Reservoir. The vegetation is mainly fourwing saltbush and Indian ricegrass on Hawsley soils and black greasewood and shadscale on Benin soils.

This map unit makes up about 2 percent of the survey area.

Hawsley soils are excessively drained and are on gently sloping and moderately sloping sand sheets. They have a light colored surface layer and are coarse textured throughout.

Benin soils are well drained and are on nearly level lake plain terraces. They have a thin, light colored, medium textured surface layer and a moderately fine textured and fine textured subsoil. They are strongly salt and sodium affected.

Of minor extent in this map unit are Isolde soils on moderately steep sand dunes and Wendane soils on nearly level lake plains. Isolde soils support fourwing saltbush and Indian ricegrass, and Wendane soils support black greasewood.

This map unit is used mainly for livestock grazing and wildlife habitat.

Areas Dominated by Soils on Fan Piedmonts, Fan Skirts, and Inset Fans

This group consists of three map units. The soils in this group are dominantly on fan piedmonts, fan skirts, and inset fans. Elevations are 4,200 to 6,000 feet. The average annual precipitation is 5 to 10 inches, the average annual temperature is 47 to 52 degrees F, and the frost-free period is 90 to 130 days.

6. Jerval-Dun Glen-Tenabo

Nearly level to strongly sloping, shallow and very deep, well drained soils on fan piedmonts and fan skirts

This map unit is in the Buffalo, Buena Vista, Grass, Jersey, and Pleasant Valleys. The vegetation is mainly shadscale, bud sagebrush, and bottlebrush squirreltail.

This map unit makes up about 20.5 percent of the survey area.

Jerval soils are very deep and are on gently sloping and moderately sloping fan piedmont remnants. They have a thin, light colored, gravelly, medium textured surface layer and a medium textured and moderately fine textured subsoil, which is underlain by gravelly, moderately coarse textured material. The subsoil is slightly sodium affected.

Dun Glen soils are very deep and are on nearly level to moderately sloping fan skirts. They are light colored and are medium textured or moderately coarse textured throughout.

Tenabo soils are shallow and are on gently sloping to strongly sloping fan piedmont remnants. They have a thin, light colored, gravelly and cobbly, medium textured surface layer and a moderately fine textured subsoil, which is underlain by an indurated, silica- and lime-cemented hardpan. The subsoil is slightly sodium affected.

Of minor extent in this map unit are Yipor soils on the moderately steep side slopes of drainageways, Trocken Variant soils on moderately sloping inset fans, and Snapp soils in gently sloping and moderately sloping areas adjacent to mountain foot slopes. Yipor soils support shadscale and bud sagebrush, and Trocken Variant and Snapp soils support Wyoming big sagebrush.

This map unit is used mainly for livestock grazing and wildlife habitat.

7. Chiara-Cortez-Orovada

Nearly level to strongly sloping, shallow, moderately deep, and very deep, well drained soils on fan piedmont remnants, inset fans, and fan skirts

This map unit is in the Buena Vista, Pumpernickle, and Grass Valleys. The vegetation is mainly Wyoming big sagebrush, bottlebrush squirreltail, and Sandberg bluegrass.

This map unit makes up about 6 percent of the survey area.

Chiara soils are shallow and are on nearly level to strongly sloping fan piedmont remnants. They have a moderately coarse textured surface layer and a medium textured subsoil, which is underlain by an indurated, silica- and lime-cemented hardpan.

Cortez soils are moderately deep and are on gently sloping to strongly sloping, severely dissected fan piedmont remnants. They have a medium textured surface layer and a fine textured subsoil, which is underlain by an indurated, silica- and lime-cemented hardpan. The subsoil is slightly sodium affected.

Orovada soils are very deep and are on nearly level and moderately sloping inset fans and fan skirts. They are medium textured throughout.

Of minor extent in this map unit are Blackhawk soils. These soils are shallow and are on the steep side slopes of fan piedmont remnants. They support shadscale and bud sagebrush.

This map unit is used mainly for livestock grazing and wildlife habitat.

8. Jerval-Misad-Knoss

Nearly level to moderately sloping, shallow to very deep, well drained soils on fan piedmonts and inset fans

This map unit is in the Antelope, Buena Vista, Dixie, Jersey, and Lovelock Valleys. The vegetation is shadscale, bud sagebrush, pine bluegrass, and some scattered Bailey greasewood.

This map unit makes up about 9 percent of the survey area.

Jerval soils are very deep and are on gently sloping and moderately sloping fan piedmonts. They have a gravelly, medium textured surface layer and a moderately fine textured subsoil, which is underlain by very gravelly, moderately coarse textured material. The subsoil is slightly sodium affected.

Misad soils are very deep and are on nearly level to moderately sloping inset fans. They have a thin, gravelly, medium textured surface layer and are very gravelly and medium textured throughout the rest of the profile.

Knoss soils are shallow and are on gently sloping and moderately sloping fan piedmont remnants. They have a thin, cobbly, medium textured surface layer and a fine textured subsoil, which is underlain by an indurated, silica- and lime-cemented hardpan. The subsoil is slightly sodium affected.

Of minor extent in this map unit are Mazuma soils. These soils are very deep and are on nearly level to moderately sloping fan skirts. They support Bailey greasewood, black greasewood, and shadscale.

This map unit is used mainly for livestock grazing and wildlife habitat.

Areas Dominated by Soils on Foothills and Mountains

This group consists of eight map units. The soils in this group are dominantly on the crests and side slopes of foothills and mountains. Elevations are 4,400 to 9,800 feet. The average annual precipitation is 7 to more than 16 inches, the average annual temperature is 41 to 52 degrees F, and the frost-free period is 60 to 120 days.

9. Theon-Singatse

Steep and very steep, shallow and very shallow, somewhat excessively drained and well drained soils on foothills and low mountains

This map unit is in the Eugene Mountains and the East, Humboldt, Stillwater, and Tobin Ranges. The vegetation is mainly shadscale and bud sagebrush.

This map unit makes up about 8.5 percent of the survey area.

Theon soils are shallow and well drained and are on the steep, convex side slopes of foothills and low mountains. They have a thin, very cobbly, medium textured surface layer and a very gravelly, moderately fine textured subsoil, which is underlain by hard bedrock.

Singatse soils are very shallow and somewhat excessively drained and are on the steep and very steep, concave side slopes of low mountains. They have a thin, extremely cobbly, medium textured surface layer and a very gravelly, medium textured subsoil, which is underlain by hard bedrock.

Of minor extent in this map unit are Uripnes soils on the steep side slopes of foothills and low mountains and Laped soils on the gently sloping and moderately sloping summits of low hills. The minor soils support shadscale, bud sagebrush, and needlegrass.

This map unit is used mainly for livestock grazing and wildlife habitat.

10. Trunk-Burrita-Hoot

Moderately sloping to steep, shallow and moderately deep, well drained soils on low mountains

This map unit is in the Augusta Mountains and the East, Humboldt, Sonoma, and Tobin Ranges. The vegetation is mainly Wyoming big sagebrush and bottlebrush squirreltail on Trunk and Burrita soils and shadscale and bottlebrush squirreltail on Hoot soils.

This map unit makes up about 4.5 percent of the survey area.

Trunk soils are moderately deep and are on the steep side slopes of low mountains. They have a thin, very cobbly, medium textured surface layer and a fine textured subsoil, which is underlain by hard bedrock.

Burrita soils are shallow and are on the moderately sloping to steep crests and convex side slopes of low mountains. They have a very cobbly, medium textured surface layer and a very cobbly, fine textured subsoil, which is underlain by hard bedrock.

Hoot soils are shallow and are on the steep, south-facing side slopes of low mountains. They have a very cobbly, medium textured surface layer and a very gravelly, medium textured subsoil, which is underlain by hard bedrock.

Of minor extent in this map unit are Puffer soils on the steep side slopes of low mountains and Pocan soils on side slopes. Puffer soils support black sagebrush, and Pocan soils support Wyoming big sagebrush.

This map unit is used mainly for livestock grazing and wildlife habitat.

11. Reluctan-Roca-Iver

Moderately steep to very steep, moderately deep and very deep, well drained soils on intermediate mountains

This map unit is in the Augusta and Eugene Mountains and the East, Humboldt, Sonoma, Stillwater, and Tobin Ranges. The vegetation is mainly mountain big sagebrush and Idaho fescue on Reluctan and Iver soils and Wyoming big sagebrush and bluebunch wheatgrass on Roca soils.

This map unit makes up about 15 percent of the survey area.

Reluctan soils are moderately deep and are on the moderately steep and steep, convex, north-facing side slopes of mountains. They have a dark colored, gravelly, medium textured surface layer and a moderately fine textured subsoil, which is underlain by hard bedrock.

Roca soils are moderately deep and are on the steep and very steep, south-facing side slopes of mountains. They have a light colored, very cobbly, medium textured surface layer and a very gravelly, fine textured subsoil, which is underlain by hard bedrock.

Iver soils are very deep and are on the steep and very steep, concave, north-facing side slopes of mountains. They have a thick, dark colored, gravelly or stony, medium textured surface layer and a medium textured subsoil.

Of minor extent in this map unit are Mulhop and Cleavage soils on the steep side slopes of mountains. Mulhop soils support Utah juniper and black sagebrush, and Cleavage soils support low sagebrush and Idaho fescue.

This map unit is used mainly for livestock grazing and wildlife habitat.

12. Layview-Tusel

Moderately sloping to very steep, very shallow and deep, well drained soils on high mountains

This map unit is in the Humboldt and Tobin Ranges. The vegetation is mainly low sagebrush and Idaho fescue on Layview soils and mountain big sagebrush and Idaho fescue on Tusel soils.

This map unit makes up about 1 percent of the survey area.

Layview soils are very shallow and are on the moderately sloping to very steep crests and convex side slopes of mountains. They have a dark colored, gravelly, medium textured surface layer and a very gravelly, medium textured and moderately fine textured subsoil, which is underlain by hard bedrock.

Tusel soils are deep and are on the steep and very steep, concave side slopes of mountains. They have a thick, dark colored, very cobbly, medium textured surface layer and a very gravelly, moderately fine textured subsoil, which is underlain by hard bedrock.

Of minor extent in this map unit are Burnborough soils on the steep lower side slopes; Harcany soils on steep, concave side slopes; and Linrose soils on the steep upper side slopes. Burborough soils support mountain big sagebrush and bluebunch wheatgrass; Harcany soils support mountain big sagebrush, lupine, and Letterman needlegrass; and Linrose soils support snowberry and mountain big sagebrush.

This map unit is used mainly for livestock grazing and wildlife habitat.

13. Puffer-Mulhop-Xine

Steep and very steep, shallow and moderately deep, well drained soils on intermediate mountains

This map unit is in the Augusta Mountains and the East, Humboldt, Sonoma, Stillwater, and Tobin Ranges. The vegetation is mainly black sagebrush and Sandberg bluegrass on Puffer soils, Utah juniper and black sagebrush on Mulhop soils, and mountain big sagebrush on Xine soils.

This map unit makes up about 5 percent of the survey area.

Puffer soils are shallow and are on the lower steep and very steep, south-facing side slopes of mountains. They have a light colored, very cobbly, medium textured surface layer and a very gravelly and extremely gravelly, medium textured subsoil, which is underlain by hard bedrock.

Mulhop soils are shallow and are on the upper south-facing side slopes of mountains. They are light colored, very gravelly, and medium textured and are underlain by hard bedrock.

Xine soils are moderately deep and are on the steep and very steep, north-facing side slopes of mountains. They have a dark colored, gravelly, medium textured surface layer and a very cobbly, medium textured and moderately coarse textured subsoil, which is underlain by hard bedrock.

Of minor extent in this map unit are Wiskan soils on the steep and very steep, convex, north-facing side slopes of mountains. These soils support black sagebrush.

This map unit is used mainly for livestock grazing and wildlife habitat.

14. Hopeka-Teguro

Steep and very steep, shallow, well drained soils on intermediate mountains

This map unit is in the Augusta and Granite Mountains and the Stillwater Range. The vegetation is

mainly singleleaf pinyon, Utah juniper, and black sagebrush on Hopeka soils and singleleaf pinyon, Utah juniper, and mountain big sagebrush on Teguro soils.

This map unit makes up about 2.5 percent of the survey area.

Hopeka soils are shallow and are on the very steep side slopes of mountains. They are light colored, gravelly, and medium textured and are underlain by hard bedrock.

Teguro soils are shallow and are on the steep side slopes of mountains. They have a dark colored, very stony, medium textured surface layer and a gravelly, medium textured and moderately fine textured subsoil, which is underlain by hard bedrock.

Of minor extent in this map unit are Kram soils on the steep and very steep side slopes of mountains and Bojo soils on the steep side slopes of mountains. Kram soils support black sagebrush, and Bojo soils support shadscale and bud sagebrush.

The map unit is used mainly for livestock grazing, wildlife habitat, and woodland.

15. Polum-Dekoom-Polum Variant

Moderately sloping to very steep, very deep and moderately deep, well drained soils on high mountains

This map unit is in the Humboldt Range. The vegetation is mainly mountain big sagebrush, snowberry, and Idaho fescue on Polum soils; low sagebrush, Idaho fescue, and bluebunch wheatgrass on Dekoom soils; and low sagebrush, black sagebrush, and Idaho fescue on Polum Variant soils.

This map unit makes up about 0.5 percent of the survey area.

Polum soils are very deep and are on the steep, concave side slopes of mountains. They have a dark colored, gravelly, medium textured surface layer and a very gravelly, medium textured subsoil.

Dekoom soils are very deep and are on the very steep, convex side slopes of mountains. They have a dark colored, very gravelly, medium textured surface layer and a gravelly to extremely gravelly, medium textured subsoil.

Polum Variant soils are moderately deep and are on the moderately sloping and strongly sloping crests of mountains. They have a dark colored, extremely gravelly, medium textured surface layer and a very gravelly, medium textured subsoil, which is underlain by hard bedrock.

Of minor extent in this map unit are Tusel soils and rock outcrop. Tusel soils are on the steep, concave, north-facing side slopes of mountains. They support mountain big sagebrush and oceanspray. Rock outcrop supports no vegetation.

This map unit is used mainly for livestock grazing and wildlife habitat.

16. Atlow-Wiskan

Moderately sloping to very steep, shallow and moderately deep, well drained soils on low and intermediate mountains

This map unit is in the Eugene Mountains and the Humboldt and Tobin Ranges. The vegetation is mainly black sagebrush and Indian ricegrass on Atlow soils and black sagebrush and bluebunch wheatgrass on Wiskan soils.

This map unit makes up about 3 percent of the survey area.

Atlow soils are shallow and are on the moderately sloping to steep crests and south-facing side slopes of mountains. They have a very gravelly, medium textured surface layer and a very gravelly and very cobbly, moderately fine textured subsoil, which is underlain by hard bedrock.

Wiskan soils are moderately deep and are on the steep and very steep, north-facing side slopes of mountains. They have a very gravelly, medium textured surface layer and a very gravelly, moderately fine textured subsoil, which is underlain by hard bedrock.

Of minor extent in this map unit are Boja soils on the side slopes of mountains and Sumine soils on the steep, concave side slopes of mountains. Boja soils support shadscale, and Sumine soils support mountain big sagebrush and bluebunch wheatgrass.

This map unit is used mainly for livestock grazing and wildlife habitat.

Broad Land Use Considerations

The soils in this survey area vary widely in their potential for major land uses, such as cropland, pasture, rangeland, wildlife habitat, and urban development. Extensive changes in land use are not expected in the foreseeable future.

About 96 percent of the land area is used for range and related purposes. Careful management is needed in the areas used for forage production. Map unit 4 has the highest potential for forage production. It is near areas of water, produces the more palatable plants, and tends to be overused. Consequently, the range in areas of this map unit deteriorates. Map units 2, 3, 5, 6, 7, and 8 are used extensively for range. The main limitation in areas of these map units generally is the lack of adequate precipitation. A duripan or bedrock limits the rooting depth in some of the soils in these areas, and rock fragments on the surface of other soils limit the use of equipment. Map units 9, 10, 11, 12, 13, 14, 15, and 16 are well suited to range. The use of

equipment is limited by the slope in most areas of these map units and by rock fragments on the surface in some areas. On some soils in map units 9, 10, 13, and 14, the rooting depth is limited.

About 1 percent of survey area is used as irrigated cropland. About 20 percent of the survey area is suitable for crops if irrigation water is available. The main crops are alfalfa hay, improved grass-legume forage, and small grain, such as barley, wheat, and oats. Small areas in map units 3, 4, 6, and 8 are used as cropland. The main limitation in areas of map units 4, 6, and 7 is the lack of water available for irrigation.

Most of the irrigation water must be pumped from deep strata wells. Wells that produce enough water for irrigation are not readily available. The Dun Glen soils in map unit 6 and the Orovada soils in map unit 7 are well suited to climatically adapted plants. A short growing season limits the selection of plants. In most areas the soils in these map units can produce good yields of irrigated crops if the content of salt and sodium is controlled. On some sloping soils in map units 6 and 7, the slope is a limitation and erosion is a hazard.

About 1 percent of the land in the survey area is used for pasture and meadow hay. Map unit 3 is extensively used for pasture and meadow hay. In most areas it is well suited to those uses. In some areas of this unit, the content of salt and sodium is a limitation.

Almost all of the land in the survey area is inhabited by numerous species of wildlife. The Humboldt River and Rye Patch Reservoir support catfish, black bass, crappie, white bass, and walleye pike. Several of the streams and small ponds in the area support trout.

The habitat for various kinds of wildlife is described in the following paragraphs.

The openland wildlife commonly inhabiting the survey area includes mule deer, pheasant, valley quail, cottontail rabbit, meadowlark, and killdeer. Map unit 3 is extensively used by these species. Wildlife are attracted to the areas of water in this unit and to the food and cover in the native meadows and pastures. Irrigated areas in map units 3, 4, 6, and 7 are extensively used by openland wildlife, and unirrigated areas in these units are used by rangeland wildlife. Watering sites are needed in the unirrigated areas. Planting fence rows and ditchbanks to selected plants can improve the habitat. The adjacent areas of range provide additional cover.

The wetland wildlife commonly inhabiting the survey area includes ducks, geese, herons, muskrat, and beaver. Only map unit 4 has extensive habitat for wetland wildlife. The soils in this map unit support wetland plants. Shallow water areas can be established on the nearly level soils in this unit but cannot be easily established on the more sloping soils. Areas that have been drained because of stream entrenchment are very limited as habitat for wetland wildlife.

The rangeland wildlife commonly inhabiting the survey area includes antelope, mule deer, jackrabbit, chukar, and sage grouse. Nearly all of the map units in the survey area are extensively used by rangeland wildlife. In many areas at the lower elevations, low precipitation limits the native plant community. Properly designing watering facilities and carefully selecting sites for these facilities can improve the habitat.

Detailed Soil Map Units

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

A map unit delineation on a map represents an area dominated by one or more major kinds of soils or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Limits for the properties of the soils within a taxonomic class are precisely defined. 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.

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

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

The detailed soil map units in the survey area reflect the various relationships of soils and component parts of the landscape. Figures 7 and 8 show, in a three-dimensional representation, the soil-physiographic relationships typical of the area. Figure 7 shows the physiographic position of various map units. Figure 8 shows the physiographic position of the major components in the same map units.

Each map unit has one or more major soil components and generally has several contrasting inclusions. The unique physiographic position is given in the map unit descriptions for each soil or miscellaneous area identified *(9)*.

Soils that have profiles that are almost alike make up a *soil series*. The soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of one series can differ in texture of the surface layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Adelaide silt loam, 2 to 8 percent slopes, is a phase of the Adelaide series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are called associations. 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. Alley-Snowmore-Rock outcrop association is an example.

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

This survey area was mapped at two levels of detail. At the more detailed level, map unit boundaries were

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

Table 4 gives the acreage and proportionate extent of each map unit. The "Glossary" defines many of the terms used in describing the soils or miscellaneous areas.

The following paragraphs explain some of the headings used in the map unit descriptions.

Map unit setting is given for the entire map unit. The setting includes position on the landscape, elevation, and climate. The landscape positions given under this heading generally are broader than those given for each major component. The elevation and climatic data apply to the entire unit rather than the individual components.

Composition is given for the components identified in the name of the map unit as well as the contrasting inclusions. Inclusions are areas of soils or miscellaneous areas that differ from the soils or miscellaneous areas 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. Under the heading "Composition," 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 so significantly 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 a limited effect on use and management. Inclusions, which are generally in small areas, could not be mapped separately because of the scale used in mapping. A special symbol on the detailed soil maps identifies some small areas of

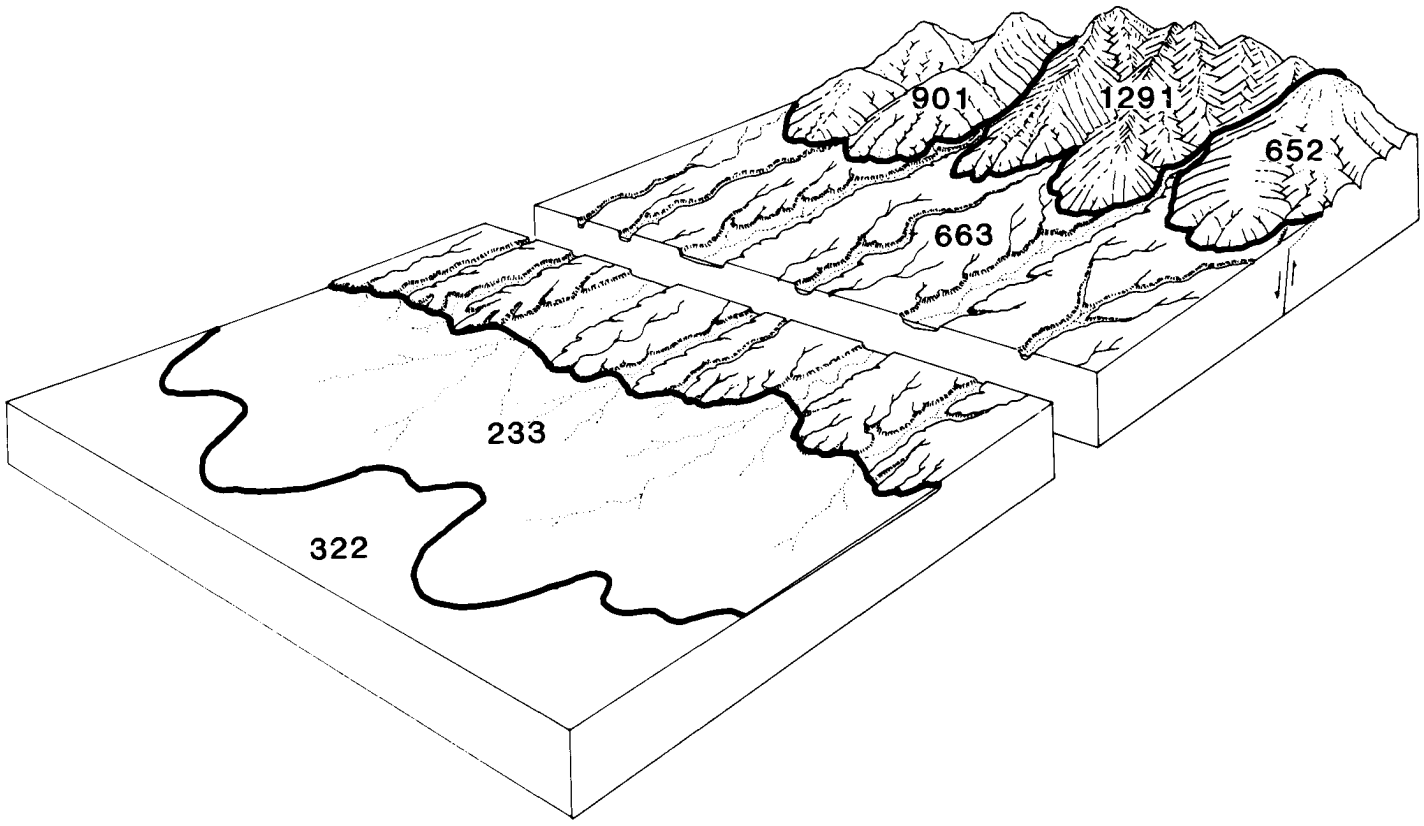

Figure 7.—The physiographic position of various detailed soil map units. These units are 233—Dun Glen very fine sandy loam, 0 to 2 percent slopes; 322—Humboldt silty clay loam, strongly saline-sodic; 652—Burrita-Hoot-Rock outcrop association; 663—Oxcorel-Weso-Beoska association; 901—Roca-Reluctan association; and 1291—Slaven-Iver-Cleavage association.

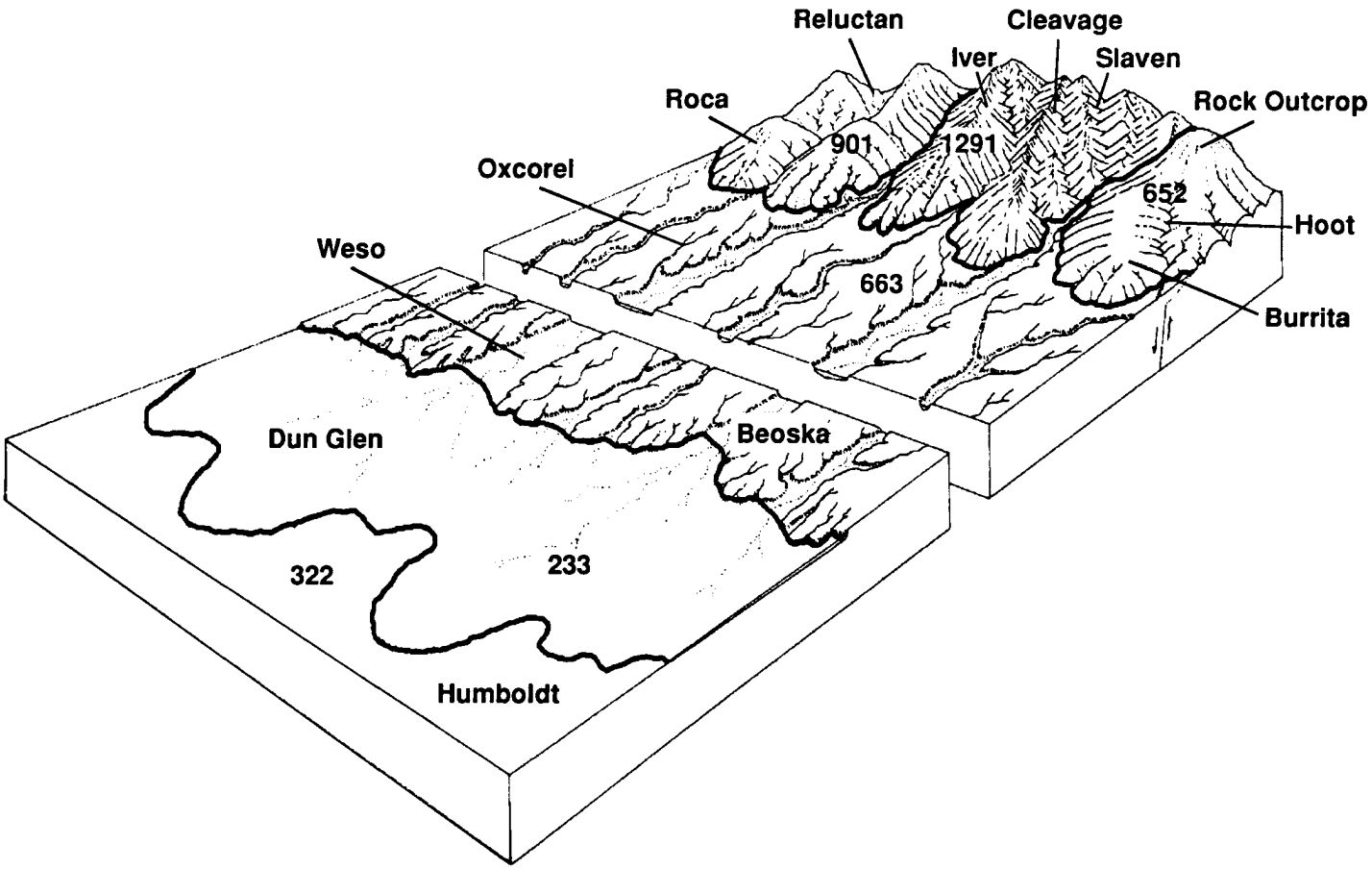

Figure 8.—The physiographic position of each major component in various detailed soil map units. These units are 233—Dun Glen very fine sandy loam, 0 to 2 percent slopes; 322—Humboldt silty clay loam, strongly saline-sodic; 652—Burrita-Hoot-Rock outcrop association; 663—Oxcorel-Weso-Beoska association; 901—Roca-Reluctan association; and 1291—Slaven-Iver-Cleavage association.

strongly contrasting inclusions. A few inclusions may not have been observed and consequently 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.

A description of the characteristics of the soils or miscellaneous areas in the map unit follows the description of composition. These characteristics include position on the landscape, parent material, slope features, the dominant present vegetation, the typical profile, and soil and water features.

After the description of the characteristics of the soils or miscellaneous areas in the map unit, the position on the landscape and distinctive present vegetation of the contrasting inclusions are described.

At the end of the descriptions, the major uses of the map unit are indicated. Also indicated are the suitability for wildlife habitat elements, ratings and restrictive features for selected uses and practices, and interpretive groups. The selected uses and practices include range seeding; daily cover for landfill; shallow excavations; local roads and streets; roadfill; sand; gravel; topsoil; pond reservoir areas; embankments, dikes, and levees; drainage; irrigation; and terraces and diversions. The "Appendix" indicates the criteria used to develop these ratings.

Map Unit Descriptions

001—Playas

Map Unit Setting

Position on landscape: Bolson floors
Elevation: 3,890 to 4,600 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F

Frost-free period: About 100 days

Composition

Major component:
• Playas—100 percent

Characteristics of the Playas

Position on landscape: Final sink area of bolson floors
Slope features: Length—long; shape—smooth or slightly concave
Dominant present vegetation: Barren

002—Badland

Map Unit Setting

Position on landscape: Bolson floors
Elevation: 4,000 to 4,300 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Badland—100 percent

Characteristics of the Badland

Position on landscape: Lake plain terraces
Slope features: Length—short; shape—convex
Dominant present vegetation: Barren

003—Slickens

Map Unit Setting

Position on landscape: Bolson floors
Elevation: 4,000 to 4,100 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major component:
• Slickens—100 percent

Characteristics of the Slickens

Position on landscape: Lake plain terraces
Slope features: Length—short; shape—smooth or slightly concave
Dominant present vegetation: Barren

004—Dumps, mine

Map Unit Setting

Position on landscape: Hillsides and the adjacent fan piedmonts
Elevation: 4,000 to 7,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Dumps, mine—100 percent

Characteristics of Dumps, Mine

Position on landscape: Mine spoil areas on hillsides and the adjacent fan piedmonts
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Barren or annual grasses, forbs, and rabbitbrush

005—Pits, gravel

Map Unit Setting

Position on landscape: Fan piedmonts or beach plains
Elevation: 3,900 to 4,300 feet
Average annual precipitation: About 6 to 10 inches
Average annual air temperature: About 42 to 48 degrees F
Frost-free period: About 80 to 120 days

Composition

Major component:
• Pits, gravel—100 percent

Characteristics of Pits, Gravel

Position on landscape: Fan piedmonts or beach plains
Parent material: Mixed alluvium or lacustrine beach deposits
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Barren

110—Adelaide silt loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Adelaide silt loam, 2 to 8 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—85 percent

Contrasting inclusions:
• Inclusion 1: Blackhawk silt loam, 2 to 8 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 2: Golconda silt loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Weso silt loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Adelaide Soil

Position on landscape: Convex summits of fan piedmont remnants
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Thurber needlegrass, bottlebrush squirreltail

Typical profile

0 to 2 inches—silt loam; 10 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
2 to 11 inches—loam; 10 to 20 percent pebbles (by weight); weak fine subangular blocky structure; massive; slightly hard, friable; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4
11 to 14 inches—cemented layer; massive; extremely hard, very firm
14 to 30 inches—clay loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); angular blocky structure; hard, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
30 to 40 inches—indurated layer; massive; extremely hard, extremely firm
40 to 60 inches—extremely gravelly loamy sand; 0 to 5 percent cobbles and stones and 75 to 90 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 15 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—moderate
Available water capacity: 1.5 to 2.4 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Foot slopes of partial ballenas
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: Summits of fan piedmonts
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Fan skirts
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Adelaide soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Adelaide soil for selected uses and practices

Range seeding: Poor—droughty, too arid, excess salt
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Drainage: Deep to water
Irrigation: Slope, cemented pan, erodes easily
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X020N

112—Adelaide silt loam, 4 to 15 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Adelaide silt loam, 4 to 15 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—85 percent
Contrasting inclusions:
• Inclusion 1: Blackhawk silt loam, 4 to 15 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 2: Golconda silt loam, 4 to 15 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Weso silt loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Adelaide Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Thurber needlegrass, bottlebrush squirreltail

Typical profile

0 to 2 inches—silt loam; 10 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
2 to 11 inches—loam; 10 to 20 percent pebbles (by weight); weak fine subangular blocky structure; massive; slightly hard, friable; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 14 inches—cemented layer; massive; extremely hard, very firm
14 to 30 inches—clay loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); angular blocky structure; hard, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
30 to 40 inches—indurated layer; massive; extremely hard, extremely firm
40 to 60 inches—extremely gravelly loamy sand; 0 to 5 percent cobbles and stones and 75 to 90 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 15 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—moderate
Available water capacity: 1.5 to 2.4 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Foot slopes of partial ballenas
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: Summits of fan piedmont remnants
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Fan aprons
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Adelaide soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous

plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Adelaide soil for selected uses and practices

Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength
Roadfill: Poor—cemented pan
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—cemented pan, area reclaim, excess salt
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer
Drainage: Deep to water
Irrigation: Slope, cemented pan, erodes easily
Terraces and diversions: Cemented pan, erodes easily, slope

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X020N

113—Adelaide silt loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Adelaide silt loam, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—85 percent
Contrasting inclusions:
• Inclusion 1: Weso silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—8 percent
• Inclusion 2: Blackhawk silt loam, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—4 percent
• Inclusion 3: Golconda silt loam, 0 to 2 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—3 percent

Characteristics of the Adelaide Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Thurber needlegrass, bottlebrush squirreltail

Typical profile

0 to 2 inches—silt loam; 10 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
2 to 11 inches—loam; 10 to 20 percent pebbles (by weight); weak fine subangular blocky structure; massive; slightly hard, friable; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 14 inches—cemented layer; massive; extremely hard, very firm
14 to 30 inches—clay loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); angular blocky structure; hard, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
30 to 40 inches—indurated layer; massive; extremely hard, extremely firm
40 to 60 inches—extremely gravelly loamy sand; 0 to 5 percent cobbles and stones and 75 to 90 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 15 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—moderate
Available water capacity: 1.5 to 2.4 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan skirts
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: The lower part of fan piedmont remnants
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: The upper part of fan piedmont remnants
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Adelaide soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Adelaide soil for selected uses and practices

Range seeding: Poor—droughty, too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—low strength
Roadfill: Poor—cemented pan
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—thin layer
Drainage: Deep to water
Irrigation: Cemented pan, erodes easily
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X020N

120—Hawsley sand, moderately wet, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Sand sheets
Elevation: 3,800 to 4,400 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Hawsley sand, moderately wet, 0 to 2 percent slopes—Typic Torripsamments, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—8 percent
• Inclusion 2: Valmy fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 3: Mazuma fine sandy loam, strongly saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent

Characteristics of the Hawsley Soil

Position on landscape: Sand sheets
Parent material: Sandy eolian material
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, Indian ricegrass, Nevada dalea

Typical profile

0 to 3 inches—sand; 0 to 10 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SP-SM; estimated AASHTO classification—A-2, A-3
3 to 60 inches—stratified fine sand to coarse sand; single grain; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SP-SM; estimated AASHTO classification—A-2, A-3

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 3.6 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded areas and margins of sand sheets
Distinctive present vegetation: Black greasewood, Indian ricegrass, Nevada dalea
Inclusion 2
Position on landscape: Margins of sand sheets
Distinctive present vegetation: Black greasewood, big sagebrush
Inclusion 3
Position on landscape: Alluvial flats
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Hawsley soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Hawsley soil for selected uses and practices

Range seeding: Poor—soil blowing, too arid, too sandy
Daily cover for landfill: Poor—seepage, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, seepage
Drainage: Deep to water
Irrigation: Droughty, soil blowing, fast intake
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 027X012N

121—Hawsley fine sand, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Sand sheets
Elevation: 3,800 to 4,400 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Hawsley fine sand, 2 to 8 percent slopes—Typic Torripsamments, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Isolde fine sand, 15 to 50 percent slopes—Typic Torripsamments, mixed, mesic—8 percent
• Inclusion 2: Ragtown silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—7 percent

Characteristics of the Hawsley Soil

Position on landscape: Sand sheets
Parent material: Sandy eolian material
Slope features: Length—long; shape—convex
Dominant present vegetation: Fourwing saltbush, Nevada dalea, Indian ricegrass, Bailey greasewood

Typical profile

0 to 3 inches—fine sand; 0 to 10 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified fine sand to coarse sand; single grain; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SP-SM; estimated AASHTO classification—A-2, A-3

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 3.6 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Sand dunes
Distinctive present vegetation: Indian ricegrass, black greasewood

Inclusion 2
Position on landscape: Lake plain terraces
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Hawsley soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Hawsley soil for selected uses and practices

Range seeding: Poor—soil blowing, too arid, too sandy
Daily cover for landfill: Poor—seepage, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, seepage
Drainage: Deep to water
Irrigation: Droughty, slope, fast intake
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 027X009N

122—Hawsley-Ragtown association

Map Unit Setting

Position on landscape: Sand sheets, lake plains
Elevation: 3,700 to 4,400 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Hawsley fine sand, 2 to 8 percent slopes—Typic Torripsamments, mixed, mesic—50 percent
• Ragtown silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—35 percent

Contrasting inclusions:
• Inclusion 1: Valmy fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 2: Aeric Halaquepts silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—4 percent
• Inclusion 3: Isolde fine sand, 15 to 30 percent slopes—Typic Torripsamments, mixed, mesic—4 percent
• Inclusion 4: Aquic Durorthidic Torriorthents silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, fine, montmorillonitic (calcareous), mesic—3 percent

Characteristics of the Hawsley Soil

Position on landscape: Sand sheets
Parent material: Sandy eolian material
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Fourwing saltbush, Nevada dalea, Indian ricegrass, Bailey greasewood

Typical profile

0 to 3 inches—fine sand; 0 to 10 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified fine sand to coarse sand; single grain; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SP-SM; estimated AASHTO classification—A-2, A-3

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 3.6 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Ragtown Soil

Position on landscape: Lake plain terraces
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth

Dominant present vegetation: Black greasewood, shadscale

Typical profile

0 to 7 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

7 to 60 inches—stratified silty clay loam to clay; massive; hard, firm; very strongly alkaline (pH 9.2); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—November through June
Permeability: Slow
Available water capacity: 9.5 to 11.1 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Sand sheets adjacent to alluvial flats
Distinctive present vegetation: Basin wildrye, black greasewood
Inclusion 2
Position on landscape: Lake plains
Distinctive present vegetation: Black greasewood
Inclusion 3
Position on landscape: Sand dunes
Distinctive present vegetation: Indian ricegrass, black greasewood
Inclusion 4
Position on landscape: Alluvial flats
Distinctive present vegetation: Indian ricegrass, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Hawsley soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—poor
Suitability of the Ragtown soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Hawsley soil for selected uses and practices

Range seeding: Poor—soil blowing, too arid, too sandy
Daily cover for landfill: Poor—seepage, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, seepage
Drainage: Deep to water
Irrigation: Droughty, slope, fast intake
Terraces and diversions: Too sandy, soil blowing

Ratings and restrictive features of the Ragtown soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—flooding, too clayey
Local roads and streets: Severe—shrink-swell, low strength, flooding
Roadfill: Poor—shrink-swell, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt

Interpretive Groups

Capability classification: Hawsley—IVs, irrigated, and VIIs, nonirrigated; Ragtown—VIIw, nonirrigated
Range site: Hawsley—027X009N; Ragtown—027X025N

131—Jerval-Chilper-Bluewing association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 7 inches

Average annual air temperature: About 51 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Jerval stony loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—40 percent
• Chilper very stony loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—35 percent
• Bluewing very gravelly loam, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Mazuma very fine sandy loam, 0 to 4 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—7 percent
• Inclusion 2: Yipor silt loam, 2 to 4 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—2 percent
• Inclusion 3: Bluewing gravelly loam, frequently flooded, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—1 percent

Characteristics of the Jerval Soil

Position on landscape: The lower part of fan piedmont remnants
Parent material: Loess over loamy and gravelly alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—10

Typical profile

0 to 6 inches—stony loam; 5 to 10 percent cobbles and stones and 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
6 to 22 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); prismatic structure; hard, friable; strongly alkaline (pH 8.5); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-4
22 to 60 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.5); moderately saline or strongly saline (more than 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 5.5 to 6.3 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Chilper Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess and volcanic ash
Slope features: Length—long; shape—plane to convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—37

Typical profile

0 to 3 inches—very stony loam; 10 to 15 percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 13 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 25 percent pebbles (by weight); subangular blocky structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 29 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.9); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
29 to 60 inches—extremely gravelly sandy loam; 0 to 10 percent cobbles and stones and 75 to 90 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 9.0); strongly saline (more

than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 5.1 to 6.6 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Very high
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bluewing Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—42

Typical profile

0 to 5 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
5 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: In the upper 5 inches—moderate; below that depth—very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: A
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale
Inclusion 2
Position on landscape: Areas adjacent to drainageways
Distinctive present vegetation: Black greasewood
Inclusion 3
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Rubber rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Jerval soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Chilper soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Bluewing soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Jerval soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage

Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Slope, excess sodium
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Chilper soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, too clayey, area reclaim
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Drainage: Deep to water
Irrigation: Percs slowly, slope, erodes easily
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Large stones, too sandy

Interpretive Groups

Capability classification: Jerval—IIIe, irrigated, and VIIs, nonirrigated; Chilper—IVs, irrigated, and VIIs, nonirrigated; Bluewing—IVs, irrigated, and VIIs, nonirrigated
Range site: Jerval—027X028N; Chilper—027X028N; Bluewing—027X030N

132—Jerval-Knoss-Chilper association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Jerval gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—45 percent
• Knoss cobbly very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, clayey, montmorillonitic, mesic, shallow—25 percent
• Chilper cobbly very fine sandy loam, 30 to 50 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Trocken very cobbly loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—6 percent
• Inclusion 2: Jerval cobbly very fine sandy loam, moderately saline-sodic, 0 to 4 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—2 percent
• Inclusion 3: Bluewing very cobbly sandy loam, frequently flooded, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—1 percent
• Inclusion 4: Typic Natrargids stony very fine sandy loam, 15 to 30 percent slopes—Typic Natrargids, fine, montmorillonitic mesic—1 percent

Characteristics of the Jerval Soil

Position on landscape: The lower part of fan piedmont remnants
Parent material: Loess over loamy and gravelly alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—25

Typical profile

0 to 6 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
6 to 22 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); prismatic structure; hard, friable; strongly alkaline (pH 8.5); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified

classification—CL; estimated AASHTO classification—A-4
22 to 60 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.5); slightly saline to strongly saline (more than 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 5.5 to 6.3 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Knoss Soil

Position on landscape: The upper part of fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—22

Typical profile

0 to 7 inches—cobbly very fine sandy loam; 10 to 25 percent cobbles and stones and 15 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
7 to 15 inches—clay; 0 to 5 percent cobbles and stones and 0 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); slightly saline or moderately saline (4 to 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
15 to 52 inches—indurated layer; platy structure; extremely hard, extremely firm; very strongly alkaline (pH 9.4)
52 to 60 inches—extremely gravelly coarse sandy loam; 5 to 15 percent cobbles and stones and 75 to 90 percent pebbles (by weight); massive; loose; very strongly alkaline (pH 9.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.0 to 2.3 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Chilper Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess and volcanic ash
Slope features: Length—long; shape—plane
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—17

Typical profile

0 to 3 inches—cobbly very fine sandy loam; 10 to 25 percent cobbles and stones and 15 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 13 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 25 percent pebbles (by weight); subangular blocky structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 29 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.9); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46);

estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

29 to 60 inches—extremely gravelly sandy loam; 0 to 10 percent cobbles and stones and 75 to 90 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 5.1 to 6.6 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex lower part of inset fans
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 2
Position on landscape: The convex upper part of inset fans
Distinctive present vegetation: Black greasewood

Inclusion 3
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Rubber rabbitbrush

Inclusion 4
Position on landscape: The convex upper part of fan piedmont remnants adjacent to mountains
Distinctive present vegetation: Black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Jerval soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Knoss soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Chilper soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Jerval soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Droughty, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Knoss soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, excess sodium, excess salt
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—thin layer, excess salt
Drainage: Deep to water
Irrigation: Droughty, percs slowly, cemented pan
Terraces and diversions: Cemented pan, erodes easily

Ratings and restrictive features of the Chilper soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, erodes easily
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—low strength, shrink-swell, slope

Roadfill: Poor—slope
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, too clayey, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium

Interpretive Groups

Capability classification: Jerval—IIIs, irrigated, and VIIs, nonirrigated; Knoss—IVe, irrigated, and VIIs, nonirrigated; Chilper—VIIs, nonirrigated
Range site: Jerval—027X028N; Knoss—027X028N; Chilper—027X030N

133—Jerval-Trocken-Golconda association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Jerval gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—45 percent
• Trocken gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—25 percent
• Golconda gravelly very fine sandy loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Haploxerollic Durorthids gravelly very fine sandy loam, 2 to 8 percent slopes—Haploxerollic Durorthids, fine-loamy, mixed, mesic—8 percent
• Inclusion 2: Durorthidic Xeric Torriorthents cobbly loam, 2 to 8 percent slopes—Durorthidic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—7 percent

Characteristics of the Jerval Soil

Position on landscape: The lower part of fan piedmont remnants
Parent material: Loess over loamy and gravelly alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—25

Typical profile

0 to 6 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
6 to 22 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); prismatic structure; hard, friable; strongly alkaline (pH 8.5); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-4
22 to 60 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.5); moderately saline or strongly saline (more than 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 5.6 to 6.3 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Trocken Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent

pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4

3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Golconda Soil

Position on landscape: The upper part of fan piedmont remnants
Parent material: Mixed alluvium with a mantle of loess high in content of volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 10 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

10 to 23 inches—gravelly clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

23 to 36 inches—cemented layer; massive; extremely hard, extremely firm; moderately alkaline (pH 8.4)

36 to 60 inches—very gravelly loamy coarse sand; 50 to 75 percent pebbles (by weight); massive; very hard, very firm; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: About 4 to 6 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan piedmont remnants adjacent to mountains
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Jerval soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Golconda soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Jerval soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Slope, droughty, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Golconda soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Poor—cemented pan, small stones, seepage
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Cemented pan, slope, percs slowly
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: Jerval—IIIe, irrigated, and VIIs, nonirrigated; Trocken—VIIs, nonirrigated; Golconda—IVe, irrigated, and VIIs, nonirrigated
Range site: Jerval—027X028N; Trocken—027X028N; Golconda—027X028N

144—Beoska-Tenabo-Dun Glen association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,600 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Beoska very stony loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—40 percent
• Tenabo very cobbly very fine sandy loam, 8 to 15 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—35 percent
• Dun Glen very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Oxcorel very stony very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—5 percent
• Inclusion 2: Trocken Variant very stony loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Beoska Soil

Position on landscape: The lower part of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—32

Typical profile

0 to 13 inches—very stony loam; 15 to 30 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
13 to 25 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.7); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified

classification—CL; estimated AASHTO classification—A-6, A-7

25 to 44 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

44 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Tenabo Soil

Position on landscape: The upper part of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—20

Typical profile

0 to 5 inches—very cobbly very fine sandy loam; 30 to 50 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

5 to 17 inches—clay loam; 5 to 30 percent pebbles (by weight); prismatic structure; slightly hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6

17 to 24 inches—indurated duripan; massive; extremely hard, extremely firm

24 to 60 inches—extremely gravelly loamy sand; 10 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 15 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderately slow
Available water capacity: 3.2 to 3.5 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Dun Glen Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—plane
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 3 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

3 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 60 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4

mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 6.8 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex upper part of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Concave inset fans
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Tenabo soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Dun Glen soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, large stones, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings and restrictive features of the Tenabo soil for selected uses and practices

Range seeding: Poor—too arid, large stones, too crusty
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—cemented pan, seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Cemented pan, slope, droughty
Terraces and diversions: Slope, large stones, cemented pan

Ratings and restrictive features of the Dun Glen soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: Beoska—VIIs, nonirrigated; Tenabo—IVs, irrigated, and VIIs, nonirrigated; Dun Glen—IIc, irrigated, and VIIc, nonirrigated
Range site: Beoska—024X002N; Tenabo—024X002N; Dun Glen—024X002N

146—Beoska-Oxcorel-Whirlo association

Map Unit Setting

Position on landscape: Fan piedmonts, fan collars
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Beoska gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—35 percent
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—30 percent
• Whirlo very stony very fine sandy loam, 8 to 15 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids cobbly loam, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—8 percent
• Inclusion 2: Typic Camborthids cobbly loam, 30 to 50 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 3: Bubus silt loam, 2 to 4 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—1 percent

Characteristics of the Beoska Soil

Position on landscape: The lower part of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—32

Typical profile

0 to 13 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
13 to 25 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.7); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
25 to 44 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
44 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: The upper part of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight);

prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Fan collars
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 3 inches—very stony very fine sandy loam; 15 to 35 percent cobbles and stones and 15 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4

3 to 11 inches—fine sandy loam; 0 to 10 percent cobbles and stones and 15 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

11 to 60 inches—very gravelly sandy loam; 5 to 30 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.1 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Channels and drainageways on narrow inset fans
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Short, concave back slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 3
Position on landscape: Toe slopes of fan skirts
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the Whirlo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt
Drainage: Deep to water
Irrigation: Slope, excess sodium, excess salt
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Whirlo soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—large stones, slope
Local roads and streets: Moderate—slope, large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Beoska—IIIe, irrigated, and VIIs, nonirrigated; Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Whirlo—VIIs, nonirrigated
Range site: Beoska—024X002N; Oxcorel—024X002N; Whirlo—024X002N

151—Blackhawk silt loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan piedmont remnants
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Blackhawk silt loam, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—85 percent
Contrasting inclusions:
• Inclusion 1: Adelaide silt loam, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—7 percent
• Inclusion 2: Dun Glen silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Golconda silt loam, 0 to 2 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—3 percent

Characteristics of the Blackhawk Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 3 inches—silt loam; 0 to 5 percent cobbles and stones and 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 14 inches—silt loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13);

estimated Unified classification—ML; estimated AASHTO classification—A-4
14 to 30 inches—cemented layer; platy structure; very hard, very firm
30 to 48 inches—gravelly loamy coarse sand; 25 to 30 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—SM; estimated AASHTO classification—A-1
48 to 60 inches—very gravelly coarse sand; 50 to 60 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GP-GM, GW-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the cemented layer—moderate; below the cemented layer—rapid
Available water capacity: 3.6 to 4.1 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Fan skirts adjacent to alluvial flats
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: The upper part of fan piedmont remnants adjacent to mountain foot slopes
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Blackhawk soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Blackhawk soil for selected uses and practices

Range seeding: Poor—too crusty, too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt
Drainage: Deep to water
Irrigation: Cemented pan
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

161—Bliss-Chiara association, sloping

Map Unit Setting

Position on landscape: Fan piedmont remnants
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Bliss fine sandy loam, 8 to 15 percent slopes—Haploxerollic Durorthids, coarse-loamy, mixed, mesic—45 percent
• Chiara fine sandy loam, 15 to 30 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—40 percent

Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids fine sandy loam, 8 to 15 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—10 percent
• Inclusion 2: Shabliss very fine sandy loam, 15 to 30 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Bliss Soil

Position on landscape: North-facing back slopes of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush

Typical profile

0 to 3 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
3 to 11 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); massive; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
11 to 21 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
21 to 45 inches—cemented layer; platy structure; very hard, very firm

Soil and water features

Depth to a hardpan: 20 to 36 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate
Available water capacity: 4.0 to 4.9 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Chiara Soil

Position on landscape: South-facing back slopes of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush

Typical profile

0 to 4 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
4 to 15 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 inches—indurated duripan; massive; extremely hard, extremely firm

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—3
Hazard of erosion: By water—severe; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave foot slopes of fan piedmont remnants
Distinctive present vegetation: Black greasewood, basin big sagebrush
Inclusion 2
Position on landscape: Convex shoulder slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bliss soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Bliss soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, slope, frost action
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—cemented pan, small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, cemented pan, slope
Terraces and diversions: Slope, cemented pan, erodes easily

Ratings and restrictive features of the Chiara soil for selected uses and practices

Range seeding: Poor—droughty, erodes easily
Daily cover for landfill: Poor—cemented pan, slope
Shallow excavations: Severe—cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Bliss—IVe, irrigated, and VIs, nonirrigated; Chiara—VIIs, nonirrigated
Range site: Bliss—024X020N; Chiara—024X005N

162—Bliss-Chiara association, moderately steep

Map Unit Setting

Position on landscape: Fan piedmont remnants
Elevation: 4,200 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Bliss fine sandy loam, 15 to 30 percent slopes—Haploxerollic Durorthids, coarse-loamy, mixed, mesic—50 percent
• Chiara fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—35 percent
Contrasting inclusions:
• Inclusion 1: Goldrun fine sand, 15 to 30 percent slopes—Xeric Torripsamments, mixed, mesic—5 percent
• Inclusion 2: Rebel loam, 2 to 8 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Sodhouse cobbly loam, 15 to 30 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Bliss Soil

Position on landscape: Back slopes of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, spiny hopsage

Typical profile

0 to 3 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
3 to 11 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); massive; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
11 to 21 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
21 to 45 inches—cemented layer; platy structure; very hard, very firm

Soil and water features

Depth to a hardpan: 20 to 36 inches

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate
Available water capacity: 4.0 to 4.9 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—3
Hazard of erosion: By water—severe; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Chiara Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical profile

0 to 4 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
4 to 15 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 inches—indurated duripan; massive; extremely hard, extremely firm

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The concave lower part of back slopes on fan piedmont remnants
Distinctive present vegetation: Basin big sagebrush
Inclusion 2
Position on landscape: Concave inset fans
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Convex, south-facing back slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bliss soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Chiara soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Bliss soil for selected uses and practices

Range seeding: Fair—too arid, erodes easily
Daily cover for landfill: Poor—cemented pan, slope
Shallow excavations: Severe—cemented pan, slope
Local roads and streets: Severe—slope
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—piping

Ratings and restrictive features of the Chiara soil for selected uses and practices

Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, cemented pan, slope

Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: Bliss—VIe, nonirrigated; Chiara—IVe, irrigated, and VIIs, nonirrigated
Range site: Bliss—024X020N; Chiara—024X005N

170—Shabliss-Enko-Valmy association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Shabliss very fine sandy loam, 2 to 8 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—40 percent
• Enko fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—25 percent
• Valmy fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Goldrun fine sand, 4 to 30 percent slopes—Xeric Torripsamments, mixed, mesic—5 percent
• Inclusion 2: Xeric Torriorthents cobbly loam, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Chiara fine sandy loam, 2 to 8 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Shabliss Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical profile

0 to 3 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 19 inches—loam; 0 to 5 percent cobbles and stones and 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
19 to 30 inches—cemented layer; massive; very hard, very firm
30 to 60 inches—very gravelly loamy sand; 0 to 5 percent cobbles and stones and 20 to 40 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—moderate
Available water capacity: 3.6 to 4.6 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Enko Soil

Position on landscape: Fan aprons
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical profile

0 to 6 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
6 to 29 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

29 to 60 inches—sandy loam; 0 to 25 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 6.5 to 8.8 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Valmy Soil

Position on landscape: Inset fans
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, basin big sagebrush
Rock fragments on the surface: Kind—gravel; percentage of surface covered—10

Typical profile

0 to 3 inches—fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 20 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4

3 to 60 inches—stratified very fine sandy loam to gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Sand dunes
Distinctive present vegetation: Indian ricegrass, basin big sagebrush

Inclusion 2
Position on landscape: Narrow drainageways on fan piedmont remnants
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush

Inclusion 3
Position on landscape: The convex upper part of fan piedmont remnants
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Shabliss soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Enko soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Valmy soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Shabliss soil for selected uses and practices

Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave

Local roads and streets: Moderate—cemented pan, frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Cemented pan, slope
Terraces and diversions: Cemented pan, erodes easily

Ratings and restrictive features of the Enko soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, percs slowly, slope
Terraces and diversions: Erodes easily, soil blowing

Ratings and restrictive features of the Valmy soil for selected uses and practices

Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—small stones, thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—thin layer, seepage, piping
Drainage: Deep to water
Irrigation: Droughty, soil blowing, slope
Terraces and diversion: Soil blowing

Interpretive Groups

Capability classification: Shabliss—IVe, irrigated, and VIIs, nonirrigated; Enko—IVe, irrigated, and VIs, nonirrigated; Valmy—IIIe, irrigated, and VIIc, nonirrigated
Range site: Shabliss—024X020N; Enko—024X020N; Valmy—024X022N

180—Chiara stony very fine sandy loam, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Fan piedmont remnants
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Chiara stony very fine sandy loam, 2 to 4 percent slopes—Xerollic Durorthids, loamy, mixed, mesic, shallow—85 percent
Contrasting inclusions:
• Inclusion 1: Haploxerollic Durorthids stony very fine sandy loam, 2 to 4 percent slopes—Haploxerollic Durorthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Durixerollic Camborthids very fine sandy loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 3: Haploxerollic Durorthids stony very fine sandy loam, 2 to 4 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Chiara Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, horsebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, stones; percentage of surface covered—7

Typical profile

0 to 4 inches—stony very fine sandy loam; 20 to 35 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 15 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
15 inches—indurated layer; massive; extremely hard, extremely firm

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: About 7 inches
Runoff: Slow
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex upper part of fan piedmont remnants
Distinctive present vegetation: Spiny hopsage
Inclusion 2
Position on landscape: Concave inset fans adjacent to drainageways
Distinctive present vegetation: Basin big sagebrush
Inclusion 3
Position on landscape: The convex lower part of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Chiara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Chiara soil for selected uses and practices

Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, large stones
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—piping, thin layer

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: 024X005N

190—Theon-Singatse-Rock outcrop association

Map Unit Setting

Position on landscape: Foothills, hills
Elevation: 4,300 to 5,000 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Theon very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Singatse extremely cobbly loam, 50 to 75 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Trocken very cobbly loam, 4 to 15 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Theon extremely cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Entic Durorthids very cobbly loam, 30 to 50 percent slopes—Entic Durorthids, loamy-skeletal, mixed, mesic—2 percent
• Inclusion 4: Lithic Xerollic Haplargids very cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—1 percent

Characteristics of the Theon Soil

Position on landscape: Back slopes of foothills
Parent material: Kind—residuum; source—andesite, rhyolite, quartzite
Slope features: Length—long; shape—plane to concave
Dominant present vegetation: Shadscale, Bailey greasewood, spiny hopsage, Indian ricegrass, Nevada ephedra, littleleaf horsebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 3 inches—very cobbly loam; 35 to 55 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GM,

SM-SC, SM; estimated AASHTO classification—A-2, A-4
3 to 8 inches—very gravelly sandy clay loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
8 to 10 inches—weathered bedrock
10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.7 to 0.8 inch
Water-supplying capacity: About 3 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Singatse Soil

Position on landscape: Side slopes of hills
Parent material: Kind—residuum; source—andesite, rhyolite, dacite, granite
Slope features: Length—long; shape—plane
Dominant present vegetation: Shadscale, Bailey greasewood, bud sagebrush, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—80

Typical profile

0 to 4 inches—extremely cobbly loam; 40 to 50 percent cobbles and stones and 65 to 75 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
4 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 15 inches—weathered bedrock
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 10 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 1.0 inch
Water-supplying capacity: About 3 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Crests, shoulder slopes, and back slopes of foothills
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave foot slopes and toe slopes of foothills
Distinctive present vegetation: Shadscale, bud sagebrush, bluegrass
Inclusion 2
Position on landscape: Convex crests of foothills
Distinctive present vegetation: Shadscale, Bailey greasewood, bluegrass
Inclusion 3
Position on landscape: Concave back slopes of foothills
Distinctive present vegetation: Shadscale, Bailey greasewood, bluegrass
Inclusion 4
Position on landscape: Concave, north-facing back slopes of foothills
Distinctive present vegetation: Black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Theon soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Singatse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Theon soil for selected uses and practices

Range seeding: Poor—too arid, small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Singatse soil for selected uses and practices

Range seeding: Poor—too arid, droughty, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Theon—VIIs, nonirrigated; Singatse—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Theon—027X019N; Singatse—027X027N

191—Theon-Singatse association

Map Unit Setting

Position on landscape: Foothills, mountains
Elevation: 4,200 to 5,500 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Theon very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—45 percent
• Singatse extremely cobbly loam, 30 to 50 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Bluewing very cobbly loam, occasionally flooded, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Theon very cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Lithic Xeric Torriorthents very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy, mixed, mesic—2 percent

Characteristics of the Theon Soil

Position on landscape: North- and east-facing back slopes of foothills
Parent material: Kind—residuum; source—andesite, rhyolite, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, spiny hopsage, Indian ricegrass, Nevada ephedra, littleleaf horsebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 3 inches—very cobbly loam; 35 to 55 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GM, SM-SC, SM; estimated AASHTO classification—A-2, A-4
3 to 8 inches—very gravelly sandy clay loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
8 to 10 inches—weathered bedrock
10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.7 to 0.8 inch
Water-supplying capacity: About 3 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Singatse Soil

Position on landscape: South- and west-facing side slopes of hills
Parent material: Kind—residuum; source—andesite, rhyolite, dacite, granite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, bud sagebrush, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—80

Typical profile

0 to 4 inches—extremely cobbly loam; 40 to 50 percent cobbles and stones and 65 to 75 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
4 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 15 inches—weathered bedrock
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 10 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 1.0 inch
Water-supplying capacity: About 3 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans adjacent to channels
Distinctive present vegetation: Rubber rabbitbrush

Inclusion 2
Position on landscape: Scattered small peaks and ridges
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Shadscale, Bailey greasewood, Indian ricegrass

Inclusion 4
Position on landscape: Concave, north-facing back slopes of mountains
Distinctive present vegetation: Black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Theon soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Singatse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Theon soil for selected uses and practices

Range seeding: Poor—too arid, small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Singatse soil for selected uses and practices

Range seeding: Poor—too arid, droughty, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Theon—VIIs, nonirrigated; Singatse—VIIs, nonirrigated
Range site: Theon—027X019N; Singatse—027X027N

201—Pirouette-Rezave-Rubble land association

Map Unit Setting

Position on landscape: Summits of plateaus, side slopes of plateaus and hills
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Pirouette very stony very fine sandy loam, 4 to 15 percent slopes—Typic Nadurargids, loamy-skeletal, mixed, mesic, shallow—45 percent
• Rezave extremely stony very fine sandy loam, 30 to 50 percent slopes—Lithic Natrargids, clayey, montmorillonitic, mesic—20 percent
• Rubble land—20 percent
Contrasting inclusions:
• Inclusion 1: Singatse very cobbly loam, 50 to 75 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—8 percent
• Inclusion 2: Xerollic Haplargids, very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—6 percent
• Inclusion 3: Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—1 percent

Characteristics of the Pirouette Soil

Position on landscape: Summits of plateaus
Parent material: Kind—residuum; source—tuff, igneous rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 4 inches—very stony very fine sandy loam; 35 to 50 percent cobbles and stones and 25 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SM-SC, GM, GM-GC; estimated AASHTO classification—A-4
4 to 14 inches—very cobbly clay loam; 30 to 40 percent cobbles and stones and 35 to 50 percent pebbles (by weight); strongly alkaline (pH 9.0); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SC, CL, GC; estimated AASHTO classification—A-6, A-7
14 to 16 inches—indurated layer
16 inches—unweathered bedrock

Soil and water features

Depth to a hardpan: 11 to 20 inches
Depth to bedrock: 12 to 23 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Rezave Soil

Position on landscape: Side slopes of plateaus
Parent material: Kind—residuum; source—basalt
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 3 inches—extremely stony very fine sandy loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
3 to 14 inches—stony clay; 5 to 30 percent cobbles and stones and 0 to 10 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

14 to 16 inches—gravelly clay loam; 5 to 10 percent cobbles and stones and 30 to 50 percent pebbles (by weight); massive; hard, firm; very strongly alkaline (pH 9.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SC, CL; estimated AASHTO classification—A-7
16 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: About 5 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Rubble Land

Position on landscape: Side slopes of plateaus
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex side slopes of plateaus
Distinctive present vegetation: Desert needlegrass
Inclusion 2
Position on landscape: Concave, north-facing side slopes of plateaus
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Convex, north-facing side slopes of plateaus
Distinctive present vegetation: Black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Rezave soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Pirouette soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Pirouette soil for selected uses and practices

Range seeding: Poor—too arid, excess sodium, droughty
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage, large stones, excess sodium

Ratings and restrictive features of the Rezave soil for selected uses and practices

Range seeding: Poor—too arid, excess sodium, droughty
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—excess sodium

Interpretive Groups

Capability classification: Pirouette—VIIs, nonirrigated; Rezave—VIIs, nonirrigated; Rubble land—VIIIs
Range site: Pirouette—027X028N; Rezave—027X030N

211—Preble Variant-Whirlo association

Map Unit Setting

Position on landscape: Fan piedmonts, alluvial flats
Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Preble Variant very fine sandy loam, 2 to 8 percent slopes—Aquic Durorthidic Torriorthents, fine-loamy,

mixed (calcareous), mesic—55 percent
• Whirlo very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Wendane silt loam, drained, 2 to 8 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Weso very stony very fine sandy loam, moderately saline-sodic, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Preble Variant Soil

Position on landscape: Alluvial flats
Parent material: Mixed alluvium and lake sediments containing pyroclastic material
Slope features: Length—long; shape—concave
Dominant present vegetation: Black greasewood, basin big sagebrush, basin wildrye, shadscale
Rock fragments on the surface: Kind—gravel; percentage of surface covered—7

Typical profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
5 to 60 inches—stratified sandy clay loam to gravelly loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; very strongly alkaline (pH 9.2); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SC, CL; estimated AASHTO classification—A-2, A-6

Soil and water features

Depth to a seasonal high water table: February through June—42 to 60 inches; rest of year—more than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.7 to 7.9 inches
Water-supplying capacity: About 14 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Characteristics of the Whirlo Soil

Position on landscape: Fan aprons
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, cheatgrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—12

Typical profile

0 to 7 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 11 inches—fine sandy loam; 0 to 5 percent cobbles and stones and 15 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-4
11 to 60 inches—very gravelly fine sandy loam; 5 to 30 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Seeps adjacent to fault lines
Distinctive present vegetation: Torrey quailbush
Inclusion 2
Position on landscape: Convex fan skirts adjacent to fan piedmonts

Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Preble Variant soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Preble Variant soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action
Roadfill: Fair—shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—excess sodium
Drainage: Deep to water
Irrigation: Slope, erodes easily, excess salt
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Whirlo soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Preble Variant—IVw, irrigated, and VIw, nonirrigated; Whirlo—IIIe, irrigated, and VIIc, nonirrigated
Range site: Preble Variant—024X022N; Whirlo—024X002N

220—Duffer silty clay loam

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Duffer silty clay loam, 0 to 2 percent slopes—Aquic Calciorthids, fine-silty, carbonatic, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Aeric Halaquepts silty clay loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Aeric Halaquepts silty clay loam, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—4 percent
• Inclusion 3: Preble silt loam, strongly saline-sodic, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 4: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Duffer Soil

Position on landscape: Alluvial flats
Parent material: Mixed lake sediments, loess, and alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Alkali sacaton, inland saltgrass, rabbitbrush

Typical profile

0 to 16 inches—silty clay loam; platy structure; hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
16 to 72 inches or more—silty clay loam; massive; very hard, firm; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and water features

Depth to a seasonal high water table: February through June—18 to 36 inches; rest of year—more than 60 inches
Flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 10 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave alluvial flats
Distinctive present vegetation: Basin wildrye
Inclusion 2
Position on landscape: Slightly concave areas in channels
Distinctive present vegetation: Black greasewood
Inclusion 3
Position on landscape: Slightly convex areas in channels
Distinctive present vegetation: Black greasewood
Inclusion 4
Position on landscape: Slightly convex lake plain terraces adjacent to fan skirts
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Duffer soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair

Ratings and restrictive features of the Duffer soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too arid
Daily cover for landfill: Fair—wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Fair—low strength, wetness, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess salt

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X010N

221—Duffer silty clay loam, occasionally flooded, slightly saline

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Duffer silty clay loam, occasionally flooded, slightly saline, 0 to 2 percent slopes—Aquic Calciorthids, fine-silty, carbonatic, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Needle Peak silt loam, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 2: Aeric Halaquepts clay loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Aeric Halaquepts silty clay loam, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—4 percent
• Inclusion 4: Preble silt loam, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent

Characteristics of the Duffer Soil

Position on landscape: Alluvial flats
Parent material: Mixed lake sediments, loess, and alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Alkali sacaton, basin wildrye, silver buffaloberry

Typical profile

0 to 16 inches—silty clay loam; platy structure; hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
16 to 72 inches—silty clay loam; massive; very hard,

firm; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: January through June—18 to 36 inches; rest of year—more than 60 inches
Flooding: Frequency—occasional; duration—very brief; months—January through June
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 10 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: The slightly concave upper part of alluvial flats
Distinctive present vegetation: Basin big sagebrush
Inclusion 2
Position on landscape: The slightly concave lower part of alluvial flats
Distinctive present vegetation: Alkali sacaton, alkali muhly
Inclusion 3
Position on landscape: Slightly concave drainageways
Distinctive present vegetation: Black greasewood
Inclusion 4
Position on landscape: Alluvial flats
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Duffer soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Duffer soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Fair—wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Fair—low strength, wetness, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess salt

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X009N

231—Dun Glen very fine sandy loam, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Dun Glen very fine sandy loam, 2 to 4 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Yipor silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Whirlo loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Dun Glen Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 3 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less

than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 60 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 6.8 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan skirts adjacent to alluvial flats
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Position on landscape: Areas adjacent to channels
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Dun Glen soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Dun Glen soil for selected uses and practices

Range seeding: Poor—too crusty, too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, slope
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIe, irrigated, and VIIc, nonirrigated
Range site: 024X002N

233—Dun Glen very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Dun Glen very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Yipor silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Whirlo loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—1 percent

Characteristics of the Dun Glen Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 3 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13);

estimated Unified classification—ML; estimated AASHTO classification—A-4

3 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 60 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 6.8 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave fan skirts adjacent to alluvial flats
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Slightly concave, narrow drainageways on fan skirts
Distinctive present vegetation: Shadscale, bottlebrush squirreltail
Inclusion 3
Position on landscape: The slightly concave lower part of fan skirts
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Dun Glen soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Dun Glen soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

234—Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Weso very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Misad gravelly very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Dun Glen Soil

Position on landscape: Inset fans
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—plane
Dominant present vegetation: Winterfat, bud sagebrush, shadscale

Typical profile

0 to 3 inches—silt loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

3 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 60 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; soft, friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—January through May
Permeability: Moderate
Available water capacity: 6.8 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex parts of inset fans
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Smooth fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Dun Glen soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Dun Glen soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, flooding
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIw, irrigated, and VIIw, nonirrigated
Range site: 024X004N

241—Toulon-Mazuma-Bluewing association

Map Unit Setting

Position on landscape: Basin floors
Elevation: 3,800 to 4,500 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Toulon very gravelly loam, 2 to 8 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—35 percent
• Mazuma silt loam, strongly saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—35 percent
• Bluewing very gravelly loam, 0 to 2 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Bezo silty clay, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Torriorthents, silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Hawsley fine sand, 2 to 8 percent

slopes—Typic Torripsamments, mixed, mesic—2 percent

Characteristics of the Toulon Soil

Position on landscape: Barrier bars
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood
Rock fragments on the surface: Kind—gravel; percentage of surface covered—75

Typical profile

0 to 13 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
13 to 18 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 60 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
18 to 60 inches—stratified gravelly coarse sand to extremely cobbly coarse sand; 25 to 50 percent cobbles and stones and 60 to 75 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Rapid
Available water capacity: 2.3 to 4.2 inches
Water-supplying capacity: About 5 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Mazuma Soil

Position on landscape: Lake plain terraces
Parent material: Mixed lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46 to 60); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 22 inches—sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic to strongly sodic (SAR 15 to 50); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
22 to 60 inches—stratified silt loam to gravelly coarse sand; 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 5.7 to 6.9 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bluewing Soil

Position on landscape: Alluvial fans
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—42

Typical profile

0 to 13 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less

than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

13 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: In the upper 13 inches—moderate; below that depth—very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth lake plains
Distinctive present vegetation: Torrey quailbush
Inclusion 2
Position on landscape: The smooth lower part of alluvial flats
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 3
Position on landscape: Dunes on alluvial flats and lake plains
Distinctive present vegetation: Indian ricegrass

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Toulon soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Mazuma soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Bluewing soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Toulon soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Large stones, droughty, slope
Terraces and diversions: Large stones, too sandy

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water

Irrigation: Droughty
Terraces and diversions: Large stones, too sandy

Interpretive Groups

Capability classification: Toulon—IVs, irrigated, and VIIs, nonirrigated; Mazuma—VIIs, nonirrigated; Bluewing—IVs, irrigated, and VIIs, nonirrigated
Range site: Toulon—027X030N; Mazuma—027X025N; Bluewing—027X030N

251—Whirlo-Beoska-Oxcorel association

Map Unit Setting

Position on landscape: Fan piedmonts, fan skirts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Whirlo very gravelly loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—45 percent
• Beoska very stony loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—25 percent
• Oxcorel very stony loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Whirlo very stony loam, 0 to 4 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Bluewing very stony sandy loam, frequently flooded, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Yipor silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—3 percent
• Inclusion 4: Dun Glen very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Whirlo Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—40

Typical profile

0 to 7 inches—very gravelly loam; 5 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
7 to 11 inches—fine sandy loam; 0 to 10 percent cobbles and stones and 15 to 20 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM; estimated AASHTO classification—A-4, A-2
11 to 60 inches—very gravelly sandy loam; 5 to 30 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.1 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—32

Typical profile

0 to 13 inches—very stony loam; 15 to 30 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 25 inches—clay loam; 0 to 25 percent pebbles (by

weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.7); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

25 to 44 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SM, GM; estimated AASHTO classification—A-1, A-2

44 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—30

Typical profile

0 to 8 inches—very stony loam; 10 to 25 percent cobbles and stones and 10 to 35 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

8 to 34 inches—clay loam; 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); moderately sodic (SAR 24 to 46); estimated AASHTO classification—CL, CH; estimated AASHTO classification—A-7

34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave terraces adjacent to narrow drainageways on fan piedmonts
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Rubber rabbitbrush
Inclusion 3
Position on landscape: The slightly concave lower part of fan skirts adjacent to alluvial flats
Distinctive present vegetation: Black greasewood
Inclusion 4
Position on landscape: The slightly convex lower part of fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Whirlo soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Whirlo soil for selected uses and practices

Range seeding: Poor—too arid, small stones, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Large stones

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, large stones, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, large stones, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Whirlo—IVs, irrigated, and VIIs, nonirrigated; Beoska—VIIs, nonirrigated; Oxcorel—VIIs, nonirrigated
Range site: Whirlo—024X002N; Beoska—024X002N; Oxcorel—024X002N

260—Golconda silt loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Golconda silt loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Blackhawk silt loam, 2 to 8 percent slopes—Entic Durorthids, loamy, mixed, mesic—10 percent
• Inclusion 2: Adelaide silt loam, 2 to 8 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—5 percent

Characteristics of the Golconda Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 23 inches—gravelly clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; very hard,

very firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); moderately sodic or strongly sodic (SAR 24 to 65); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

23 to 36 inches—strongly cemented duripan; massive; extremely hard, extremely firm

36 to 60 inches—very gravelly loamy coarse sand; 50 to 75 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—GP-GM, GM, GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow; below the duripan—moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex foot slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Inclusion 2
Position on landscape: Concave erosional fan remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Wildlife habitat, rangeland
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Golconda soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Golconda soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, excess sodium, small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Cemented pan, slope, percs slowly
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X002N

261—Golconda silt loam, 8 to 15 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Golconda silt loam, 8 to 15 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Adelaide silt loam, 4 to 15 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 2: Blackhawk silt loam, 2 to 8 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 3: Weso very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Golconda Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—convex

Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical profile

0 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

10 to 23 inches—gravelly clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); moderately sodic or strongly sodic (SAR 24 to 65); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7

23 to 36 inches—strongly cemented duripan; massive; extremely hard, extremely firm

36 to 60 inches—very gravelly loamy coarse sand; 50 to 75 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—GP-GM, GP, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow; below the duripan—moderately rapid
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, north-facing side slopes of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex crests of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 3
Position on landscape: Convex inset fans and foot slopes of fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Golconda soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Golconda soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, excess sodium, small stones
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, cemented pan, slope
Terraces and diversions: Slope, cemented pan, erodes easily

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X002N

270—Goldrun fine sand, 4 to 15 percent slopes

Map Unit Setting

Position on landscape: Dunes
Elevation: 3,600 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Goldrun fine sand, 4 to 15 percent slopes—Xeric Torripsamments, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 2: Rebel loam, 2 to 8 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Valmy fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 4: Benin silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—3 percent

Characteristics of the Goldrun Soil

Position on landscape: Sand dunes
Parent material: Eolian material and sandy lacustrine material somewhat influenced by volcanic ash
Slope features: Length—short; shape—convex
Dominant present vegetation: Basin big sagebrush, spiny hopsage, needleandthread

Typical profile

0 to 8 inches—fine sand; single grain; loose; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2
8 to 60 inches—fine sand; loose; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Rapid
Available water capacity: 4.2 to 5.4 inches
Water-supplying capacity: About 8 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—very severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan skirts
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Convex inset fans
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave inset fans
Distinctive present vegetation: Shadscale
Inclusion 4
Position on landscape: Plane to convex alluvial flats
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Goldrun soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Goldrun soil for selected uses and practices

Range seeding: Poor—too sandy, soil blowing, droughty
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, fast intake, soil blowing
Terraces and diversions: Slope, too sandy, soil blowing

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X001N

281—Golsum-Spinlin-Harcany association

Map Unit Setting

Position on landscape: Mountain slopes
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 13 inches

Average annual air temperature: About 40 degrees F
Frost-free period: About 65 days

Composition

Major components:
• Golsum very cobbly loam, 30 to 50 percent slopes—Aridic Calcic Argixerolls, clayey-skeletal, montmorillonitic, frigid—35 percent
• Spinlin very stony silt loam, 30 to 50 percent slopes—Argic Cryoborolls, clayey-skeletal, montmorillonitic—25 percent
• Harcany stony silt loam, 30 to 50 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—25 percent
Contrasting inclusions:
• Inclusion 1: Cleavage extremely gravelly loam; 4 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Pachic Cryoborolls silt loam, 30 to 50 percent slopes—Pachic Cryoborolls, fine-loamy, mixed—2 percent
• Inclusion 4: Fluventic Haploxerolls loam, 2 to 8 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Golsum Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—tuff, sedimentary and metamorphic rocks
Slope features: Length—long; shape—plane to convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye

Typical profile

0 to 9 inches—very cobbly loam; 50 to 65 percent cobbles and stones and 15 to 30 percent pebbles (by weight); slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
9 to 24 inches—very gravelly clay; 0 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
24 to 31 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 60 to 70 percent pebbles (by weight); angular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
31 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.8 to 3.5 inches
Water-supplying capacity: About 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Spinlin Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—quartzite, chert, rhyolite
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, bluebunch wheatgrass, Idaho fescue

Typical profile

0 to 6 inches—very stony silt loam; 25 to 35 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6
6 to 36 inches—very cobbly clay; 35 to 45 percent cobbles and stones and 30 to 55 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-7
36 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 4.1 to 4.9 inches
Water-supplying capacity: About 12 inches

Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Harcany Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—sandstone, andesite, argillite, quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, snowberry, bluebunch wheatgrass

Typical profile

0 to 4 inches—stony silt loam; 5 to 10 percent cobbles and stones and 30 to 40 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

4 to 18 inches—very gravelly silt loam; 15 to 25 percent cobbles and stones and 50 to 60 percent pebbles (by weight); massive; slightly hard, very friable; neutral (pH 6.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-4

18 to 72 inches or more—extremely gravelly sandy loam; 15 to 25 percent cobbles and stones and 65 to 85 percent pebbles (by weight); massive; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GW-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 8.6 to 10.1 inches
Water-supplying capacity: About 3 to 15 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 2
Position on landscape: The crests and upper side slopes of mountains
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Side slopes of mountains
Distinctive present vegetation: Quaking aspen
Inclusion 4
Position on landscape: Concave stream terraces
Distinctive present vegetation: Basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Golsum soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Spinlin soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Harcany soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Golsum soil for selected uses and practices

Range seeding: Poor—erodes easily, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Spinlin soil for selected uses and practices

Range seeding: Poor—erodes easily, slope, large stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope, shrink-swell
Roadfill: Poor—depth to bedrock, shrink-swell, slope
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Harcany soil for selected uses and practices

Range seeding: Poor—erodes easily, slope
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, slope, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Golsum—VIIs, nonirrigated; Spinlin—VIIs, nonirrigated; Harcany—VIIs, nonirrigated
Range site: Golsum—024X029N; Spinlin—024X027N; Harcany—024X032N

321—Humboldt silty clay loam, slightly saline-sodic

Map Unit Setting

Position on landscape: Flood plains
Elevation: 3,900 to 4,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Humboldt silty clay loam, slightly saline-sodic, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Sonoma silty clay loam, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Fluvaquentic Haploxerolls loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Humboldt silty clay loam, strongly saline-sodic, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—1 percent

Characteristics of the Humboldt Soil

Position on landscape: Flood plains
Parent material: Mixed silty alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Willow, creeping wildrye, basin wildrye

Typical profile

0 to 6 inches—silty clay loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.5); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-7
6 to 60 inches—stratified silty clay loam to clay; massive; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—MH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: December through June—6 to 24 inches; rest of year—more than 60 inches
Flooding: Frequency—frequent; duration—brief to long; months—February through June
Permeability: Moderately slow
Available water capacity: 10.3 to 11.5 inches
Water-supplying capacity: About 13 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Convex shoulder slopes of drainageways
Distinctive present vegetation: Basin wildrye, creeping wildrye
Inclusion 3
Position on landscape: Flood plains
Distinctive present vegetation: Alkali sacaton, inland saltgrass

Major Uses

Current uses: Irrigated cropland, rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Humboldt soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; wetland plants—good; shallow water areas—good

Ratings and restrictive features of the Humboldt soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, wetness, flooding
Roadfill: Poor—low strength, wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, wetness, too clayey
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—hard to pack, wetness, excess salt
Drainage: Flooding, frost action
Irrigation: Wetness
Terraces and diversions: Wetness, erodes easily

Interpretive Groups

Capability classification: IIIw, irrigated, and VIw, nonirrigated
Range site: 025X001N

322—Humboldt silty clay loam, strongly saline-sodic

Map Unit Setting

Position on landscape: Flood plains
Elevation: 3,900 to 4,300 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Humboldt silty clay loam, strongly saline-sodic, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Sonoma silty clay loam, occasionally flooded, strongly saline-sodic, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Fluvaqentic Haploxerolls loam, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Humboldt silty clay loam, slightly saline-sodic, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—1 percent

Characteristics of the Humboldt Soil

Position on landscape: Flood plains
Parent material: Mixed silty alluvium influenced by volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Alkali sacaton, inland saltgrass, basin wildrye, black greasewood

Typical profile

0 to 13 inches—silty clay loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.5); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-7
13 to 60 inches—stratified silty clay loam to clay; massive; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic to moderately sodic (SAR 5 to 45); estimated Unified classification—MH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: December through June—6 to 24 inches; rest of year—more than 60 inches
Flooding: Frequency—frequent; duration—brief to long; months—February through June
Permeability: Moderately slow
Available water capacity: 10.3 to 11.5 inches
Water-supplying capacity: About 13 to 15 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: The smooth upper part of flood plains
Distinctive present vegetation: Basin wildrye, black greasewood
Inclusion 2
Position on landscape: Natural levees of channels

Distinctive present vegetation: Willow, creeping wildrye, basin wildrye

Inclusion 3

Position on landscape: Oxbows and depressional areas on flood plains

Distinctive present vegetation: Willow, creeping wildrye, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Humboldt soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—good; shallow water areas—good

Ratings and restrictive features of the Humboldt soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium

Daily cover for landfill: Poor—too clayey, hard to pack, wetness

Shallow excavations: Severe—wetness

Local roads and streets: Severe—low strength, wetness, flooding

Roadfill: Poor—low strength, wetness

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—excess salt, wetness, too clayey

Pond reservoir areas: Moderate—seepage

Embankments, dikes, and levees: Severe—hard to pack, wetness, excess salt

Interpretive Groups

Capability classification: VIIw, nonirrigated

Range site: 024X007N

330—McConnel loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Inset fans

Elevation: 4,200 to 4,800 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 49 degrees F

Frost-free period: About 110 days

Composition

Major component:

• McConnel loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—85 percent

Contrasting inclusions:

• Inclusion 1: Rebel loam, 0 to 2 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—8 percent

• Inclusion 2: Orovada fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—7 percent

Characteristics of the McConnel Soil

Position on landscape: Inset fans

Parent material: Mixed alluvium influenced by loess and volcanic ash

Slope features: Length—long; shape—convex

Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass, bottlebrush squirreltail

Typical profile

0 to 20 inches—loam; 5 to 15 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

20 to 60 inches—extremely gravelly loamy coarse sand; 0 to 15 percent cobbles and stones and 65 to 90 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.5); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic or slightly sodic (SAR 5 to 23); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches

Flooding: None

Permeability: Rapid

Available water capacity: 4.0 to 5.4 inches

Water-supplying capacity: About 8 inches

Runoff: Medium

Hydrologic group: B

Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—5

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—moderate

Potential for frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Convex inset fans

Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Inclusion 2

Position on landscape: Smooth fan skirts

Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat

Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the McConnel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the McConnel soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Too sandy, erodes easily

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X020N

331—McConnel gravelly fine sandy loam, 4 to 8 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,200 to 4,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• McConnel gravelly fine sandy loam, 4 to 8 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Orovada gravelly fine sandy loam, 4 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—8 percent
• Inclusion 2: Bliss gravelly fine sandy loam, 4 to 8 percent slopes—Haploxerollic Durorthids, coarse-loamy, mixed, mesic—7 percent

Characteristics of the McConnel Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel; percentage of surface covered—20

Typical profile

0 to 20 inches—gravelly fine sandy loam; 30 to 50 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-4
20 to 60 inches—extremely gravelly loamy coarse sand; 0 to 15 percent cobbles and stones and 65 to 90 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.5); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Rapid
Available water capacity: 4.0 to 5.4 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex upper part of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass
Inclusion 2
Position on landscape: The convex lower part of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the McConnel soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; domestic grasses and legumes (irrigated)—fair; grain and seed crops (irrigated)—fair

Ratings and restrictive features of the McConnel soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Too sandy

Interpretive Groups

Capability classification: IVe, irrigated, and VIIs, nonirrigated
Range site: 024X020N

360—Needle Peak silt loam, slightly saline-sodic

Map Unit Setting

Position on landscape: Flood plains
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Needle Peak silt loam, slightly saline-sodic, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Needle Peak silt loam, strongly saline-sodic, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—7 percent
• Inclusion 2: Benin silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—3 percent
• Inclusion 3: Dun Glen silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 4: Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—2 percent

Characteristics of the Needle Peak Soil

Position on landscape: Flood plains
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—plane
Dominant present vegetation: Basin big sagebrush, basin wildrye, bottlebrush squirreltail

Typical profile

0 to 4 inches—silt loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.2); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7
4 to 60 inches—silt loam; massive; hard, friable; strongly alkaline (pH 8.9); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and water features

Depth to a seasonal high water table: January through June—36 to 60 inches; rest of year—more than 60 inches
Flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 10 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: The smooth lower part of flood plains
Distinctive present vegetation: Black greasewood

Inclusion 2
Position on landscape: Smooth alluvial flats adjacent to flood plains
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Smooth fan skirts adjacent to flood plains
Distinctive present vegetation: Shadscale
Inclusion 4
Position on landscape: Smooth toe slopes of fan skirts
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Needle Peak soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair; wetland plants—fair; shallow water areas—fair

Ratings and restrictive features of the Needle Peak soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Moderate—piping, wetness
Drainage: Deep to water
Irrigation: Excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIw, irrigated, and VIw, nonirrigated
Range site: 024X006N

380—Ninch fine sand, 0 to 15 percent slopes

Map Unit Setting

Position on landscape: Sand dunes, sand sheets
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Ninch fine sand, 0 to 15 percent slopes—Durorthidic Xeric Torrifluvents, sandy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Goldrun fine sand, 4 to 15 percent slopes—Xeric Torripsamments, mixed, mesic—8 percent
• Inclusion 2: Valmy sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—7 percent

Characteristics of the Ninch Soil

Position on landscape: Sand dunes, sand sheets
Parent material: Eolian material influenced by volcanic ash
Slope features: Length—long; shape—convex and smooth
Dominant present vegetation: Basin big sagebrush, Indian ricegrass, needleandthread, rabbitbrush

Typical profile

0 to 6 inches—fine sand; single grain; loose; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2
6 to 35 inches—stratified fine sand to loamy fine sand; massive; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2
35 to 41 inches—fine sandy loam; massive; hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2
41 to 70 inches—very fine sandy loam; massive; very hard, firm; very strongly alkaline (pH 9.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 7.8 to 8.6 inches

Water-supplying capacity: About 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—3; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Dunes
Distinctive present vegetation: Basin big sagebrush, Indian ricegrass
Inclusion 2
Position on landscape: Smooth and slightly concave inset fan remnants adjacent to drainageways
Distinctive present vegetation: Black greasewood, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Ninch soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair

Ratings and restrictive features of the Ninch soil for selected uses and practices

Range seeding: Poor—droughty, too sandy
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, soil blowing, fast intake
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X001N

400—Orovada loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,200 to 4,800 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Orovada loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Rebel loam, 0 to 2 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—6 percent
• Inclusion 2: Dun Glen loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: McConnel cobbly very fine sandy loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Adelaide loam, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—2 percent

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—plane to convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass, rabbitbrush

Typical profile

0 to 6 inches—loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.7); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 15 inches—fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
15 to 60 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The smooth lower part of fan skirts
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass
Inclusion 2
Position on landscape: The smooth lower part of fan skirts
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Smooth and slightly concave inset fans
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass
Inclusion 4
Position on landscape: The smooth and slightly convex upper part of fan skirts
Distinctive present vegetation: Wyoming big sagebrush, Sandberg bluegrass

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Orovada soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Orovada soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X020N

406—Orovada very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Orovada very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids very stony very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Xeric Torriorthents very cobbly loam, occasionally flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed, mesic—2 percent
• Inclusion 3: Valmy fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—1 percent

Characteristics of the Orovada Soil

Position on landscape: Fan skirts
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Thurber needlegrass, Wyoming big sagebrush, spiny hopsage
Rock fragments on the surface: Kind—gravel; percentage of surface covered—10

Typical profile

0 to 11 inches—very fine sandy loam; 0 to 10 percent

pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.7); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

11 to 24 inches—fine sandy loam; 5 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.5); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

24 to 60 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of fan remnants
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass
Inclusion 2
Position on landscape: Channels
Distinctive present vegetation: Basin wildrye
Inclusion 3
Position on landscape: The lower part of fan skirts and fan aprons
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Orovada soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Orovada soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, slope
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIe, irrigated, and VIc, nonirrigated
Range site: 024X020N

431—Preble silt loam, strongly saline-sodic

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Preble silt loam, strongly saline-sodic, 0 to 2 percent slopes—Aquic Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Valmy fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Ninch fine sand, 0 to 2 percent slopes—Durorthidic Xeric Torrifluvents, sandy, mixed, mesic—3 percent
• Inclusion 3: Sonoma silt loam, strongly saline-sodic, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Preble Soil

Position on landscape: Alluvial flats
Parent material: Mixed alluvium and lake sediments influenced by pyroclastic material
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, seepweed

Typical profile

0 to 4 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.5); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 44 inches—fine sandy loam; 0 to 5 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.3); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
44 to 60 inches—sandy clay loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.0); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, SC; estimated AASHTO classification—A-2, A-6, A-7

Soil and water features

Depth to a seasonal high water table: February through June—36 inches; rest of year—more than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 8.0 to 10.0 inches
Water-supplying capacity: About 10 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—4; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth fan skirts
Distinctive present vegetation: Basin big sagebrush
Inclusion 2
Position on landscape: Slightly concave channels
Distinctive present vegetation: Basin big sagebrush
Inclusion 3
Position on landscape: Smooth lake plain terraces
Distinctive present vegetation: Basin wildrye, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Preble soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Preble soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X011N

451—Pumper loam

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Pumper loam, 0 to 2 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Adelaide loam, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—4 percent
• Inclusion 2: Blackhawk loam, 0 to 2 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—4 percent
• Inclusion 3: Dun Glen loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 4: McConnel loam, 0 to 2 percent slopes—

Xerollic Camborthids, sandy-skeletal, mixed, mesic—3 percent

Characteristics of the Pumper Soil

Position on landscape: Fan skirts
Parent material: Loamy loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—plane
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical profile

0 to 12 inches—loam; 0 to 15 percent pebbles (by weight); weak fine subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
12 to 60 inches—stratified very gravelly loam to extremely gravelly coarse sand; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 8.6); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Rapid
Available water capacity: 3.1 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave fan piedmont remnants adjacent to fan skirts
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex fan piedmont remnants adjacent to fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: The smooth lower part of fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 4
Position on landscape: Narrow drainageways on fan skirts
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Pumper soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Pumper soil for selected uses and practices

Range seeding: Poor—too arid
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X002N

470—Raglan silt loam

Map Unit Setting

Position on landscape: Alluvial flat remnants
Elevation: 4,000 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Dun Glen silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Needle Peak silt loam, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Raglan Soil

Position on landscape: Alluvial flat remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical profile

0 to 7 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 13 inches—silt loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4, A-6
13 to 60 inches—stratified very fine sandy loam to silty clay loam; 0 to 5 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.9); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4, A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 11.0 to 12.6 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex inset fans
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 2
Position on landscape: Concave inset fans
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 3
Position on landscape: Smooth alluvial flat remnants
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, irrigated cropland

Wildlife habitat elements

Suitability of the Raglan soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Raglan soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

471—Raglan silt loam, moderately saline-sodic

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,000 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Raglan silt loam, moderately saline-sodic, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Dun Glen silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Needle Peak silt loam, slightly saline-sodic, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Raglan Soil

Position on landscape: Alluvial flat remnants
Parent material: Loess and volcanic ash over mixed alluvium and lacustrine material
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, bud sagebrush

Typical profile

0 to 7 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); nonsodic to moderately sodic (SAR 5 to 40); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 13 inches—silt loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic or strongly sodic (SAR 30 to 130); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4, A-6
13 to 60 inches—stratified very fine sandy loam to silty clay loam; 0 to 5 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 8.9); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR 47 to 170); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4, A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan skirts adjacent to the upper part of alluvial flats
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 3
Position on landscape: Smooth alluvial flats
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Raglan soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Raglan soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: 024X003N

480—Rebel loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Rebel loam, 0 to 2 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: McConnel loam, 0 to 2 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Needle Peak silt loam, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Orovada loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Rebel Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical profile

0 to 13 inches—loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 60 inches—loam; 5 to 15 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 7.9 to 9.3 inches
Water-supplying capacity: About 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The upper drainageways
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: The lower drainageways
Distinctive present vegetation: Basin big sagebrush, basin wildrye
Inclusion 3
Position on landscape: Convex areas on inset fans
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Rebel soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Rebel soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIc, nonirrigated
Range site: 024X020N

481—Rebel loam, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Rebel loam, 2 to 4 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Bliss loam, 2 to 4 percent slopes—Haploxerollic Durorthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: McConnel cobbly very fine sandy loam, 2 to 4 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Orovada loam, 2 to 4 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Rebel Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Typical profile

0 to 13 inches—loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 60 inches—sandy loam; 5 to 15 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 7.9 to 9.3 inches
Water-supplying capacity: About 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The slightly concave upper part of inset fans
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush
Inclusion 2
Position on landscape: Narrow drainageways on inset fans
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush
Inclusion 3
Position on landscape: Remnants of inset fans
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Rebel soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Rebel soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Slope, erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIc, nonirrigated
Range site: 024X020N

482—Rebel loam, rarely flooded, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Rebel loam, rarely flooded, 0 to 2 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents cobbly loam, occasionally flooded, 0 to 2 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—10 percent

Characteristics of the Rebel Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—long; shape—plane to concave
Dominant present vegetation: Basin big sagebrush, spiny hopsage, Anderson peachbrush, black greasewood

Typical profile

0 to 13 inches—loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 60 inches—sandy loam; 5 to 15 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderately rapid
Available water capacity: 7.9 to 9.3 inches
Water-supplying capacity: About 8 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate
Distinctive present vegetation: Basin big sagebrush, black greasewood

Contrasting Inclusions

Inclusion 1
Position on landscape: Channels
Distinctive present vegetation: Big sagebrush, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Rebel soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Rebel soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action, flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIc, nonirrigated
Range site: 024X041N

500—Pocker silty clay loam

Map Unit Setting

Position on landscape: Stream terraces
Elevation: 4,000 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Pocker silty clay loam, 0 to 2 percent slopes—Typic Torrifluvents, fine, montmorillonitic (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Aquentic Durorthids silt loam, 0 to 2 percent slopes—Aquentic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—3 percent
• Inclusion 4: Needle Peak silt loam, slightly saline-sodic, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—3 percent

Characteristics of the Pocker Soil

Position on landscape: Stream terraces
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Basin big sagebrush, black greasewood, basin wildrye

Typical profile

0 to 10 inches—silty clay loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic or strongly sodic (SAR 30 to 60); estimated Unified classification—CL; estimated AASHTO classification—A-7
10 to 60 inches—silty clay; 0 to 5 percent pebbles (by weight); massive; hard, friable; strongly alkaline (pH 9.2); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46 to 100); estimated Unified classification—CH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 8.9 to 10.2 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Alluvial flats
Distinctive present vegetation: Alkali sacaton
Inclusion 2
Position on landscape: Alluvial flats
Distinctive present vegetation: Shadscale
Inclusion 3
Position on landscape: Fan skirts adjacent to stream terraces
Distinctive present vegetation: Shadscale
Inclusion 4
Position on landscape: Channels
Distinctive present vegetation: Basin big sagebrush, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Pocker soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Pocker soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too arid
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, erodes easily, excess salt
Terraces and diversions: Erodes easily, percs slowly

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 024X006N

561—Sonoma silt loam, occasionally flooded, strongly saline-sodic

Map Unit Setting

Position on landscape: Flood plains
Elevation: 3,900 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Sonoma silt loam, occasionally flooded, strongly saline-sodic, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Humboldt silty clay loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, montmorillonitic (calcareous), mesic—5 percent
• Inclusion 2: Fluvaquentic Haploxerolls loam, frequently flooded, 0 to 2 percent slopes—Fluvaquentic Haploxerolls, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Sonoma silt loam, frequently flooded, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Alkali sacaton, inland saltgrass, black greasewood

Typical profile

0 to 9 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
9 to 60 inches—stratified silt loam to silty clay loam; massive, hard; strongly alkaline (pH 8.6); firm; nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and water features

Depth to a seasonal high water table: February through June—18 to 36 inches; rest of year—more than 60 inches
Flooding: Frequency—occasional; duration—brief; months—February through June
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 16 inches
Runoff: Ponded
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: The concave lower part of channels and oxbows
Distinctive present vegetation: Willow
Inclusion 2
Position on landscape: Convex areas adjacent to channels
Distinctive present vegetation: Willow
Inclusion 3
Position on landscape: Channels, oxbows
Distinctive present vegetation: Willow

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Sonoma soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Sonoma soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess salt

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X007N

562—Sonoma silt loam, drained, strongly saline-sodic

Map Unit Setting

Position on landscape: Flood plains
Elevation: 3,800 to 4,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Sonoma silt loam, drained, strongly saline-sodic, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents silt loam, 2 to 8 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—7 percent
• Inclusion 2: Yobe silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Typic Torrifluvents silt loam, 0 to 2 percent slopes—Typic Torrifluvents, fine, montmorillonitic (calcareous), mesic—3 percent

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Mixed alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, basin wildrye, seepweed

Typical profile

0 to 9 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
9 to 60 inches—stratified silt loam to silty clay loam; massive; hard, firm; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

Soil and water features

Depth to a seasonal high water table: April through September—42 to 60 inches; rest of year—more than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 16 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Depressional areas on flood plains
Distinctive present vegetation: Basin wildrye, black greasewood
Inclusion 2
Position on landscape: Slightly elevated areas on flood plains
Distinctive present vegetation: Basin big sagebrush, basin wildrye, Torrey quailbush
Inclusion 3
Position on landscape: Channels, oxbows
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Sonoma soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Sonoma soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—excess salt
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X011N

563—Sondoa-Swingler-Isolde association

Map Unit Setting

Position on landscape: Stream terraces
Elevation: 3,800 to 4,300 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 52 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Sondoa silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—45 percent
• Swingler silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—20 percent
• Isolde fine sand, 4 to 15 percent slopes—Typic Torripsamments, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Fluvaquentic Haplaquolls silt loam, 0 to 2 percent slopes—Fluvaquentic Haplaquolls, fine, mixed (calcareous), mesic—5 percent
• Inclusion 2: Playas—5 percent
• Inclusion 3: Hawsley sand, moderately wet, 0 to 4 percent slopes—Typic Torripsamments, mixed, mesic—3 percent
• Inclusion 4: Typic Torriorthents silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—2 percent

Characteristics of the Sondoa Soil

Position on landscape: Stream terraces
Parent material: Mixed alluvium and lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, seepweed, basin wildrye

Typical profile

0 to 6 inches—silt loam; platy structure; slightly hard, very friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 60); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4, A-6
6 to 60 inches—stratified silt loam to silty clay loam; massive; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 60); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Swingler Soil

Position on landscape: Stream terraces
Parent material: Silty alluvium over mixed lacustrine deposits
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, seepweed, Bailey greasewood

Typical profile

0 to 6 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
6 to 60 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); moderately saline or strongly saline (more than 8 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 9.1 to 11.4 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Isolde Soil

Position on landscape: Sand dunes
Parent material: Sandy eolian material
Slope features: Length—short; shape—convex

Dominant present vegetation: Black greasewood, hairy horsebrush, Indian ricegrass

Typical profile

0 to 3 inches—fine sand; single grain; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-3

3 to 60 inches or more—fine sand; single grain; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-3

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth deltas
Distinctive present vegetation: Saltcedar, alkali sacaton
Inclusion 2
Position on landscape: Smooth depressions on the lower stream terraces
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Smooth sand sheets
Distinctive present vegetation: Nevada dalea
Inclusion 4
Position on landscape: The smooth upper part of stream terraces
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Sondoa soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Swingler soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Isolde soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Sondoa soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt

Ratings and restrictive features of the Swingler soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, thin layer, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings and restrictive features of the Isolde soil for selected uses and practices

Range seeding: Poor—too arid, soil blowing
Daily cover for landfill: Poor—seepage, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, fast intake, slope

Terraces and diversions: Slope, too sandy, soil blowing

Interpretive Groups

Capability classification: Sondoa—VIIs, nonirrigated; Swingler—VIIs, nonirrigated; Isolde—IVs, irrigated, and VIIs, nonirrigated
Range site: Sondoa—027X025N; Swingler—027X025N; Isolde—027X016N

581—Sumine-Gosumi-Nomara association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 7,000 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 85 days

Composition

Major components:
• Sumine cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
• Gosumi stony loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—25 percent
• Nomara stony silt loam, 30 to 50 percent slopes—Calcic Pachic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Cleavage extremely gravelly loam, 4 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—7 percent
• Inclusion 2: Rock outcrop—4 percent
• Inclusion 3: Xeric Torriorthents very cobbly loam, 30 to 50 percent slopes—Xeric Torriorthents, clayey-skeletal, montmorillonitic (calcareous), frigid—3 percent
• Inclusion 4: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Sumine Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum, colluvium; source—mixed rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, scattered Utah juniper in some areas
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 2 inches—cobbly loam; 20 to 30 percent cobbles and stones and 15 to 25 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
2 to 22 inches—very gravelly clay loam; 15 to 40 percent cobbles and stones and 40 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
22 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.2 to 2.9 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Gosumi Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum, colluvium; source—quartz, grit, sandstone, shale, limestone
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—20

Typical profile

0 to 8 inches—stony loam; 5 to 10 percent cobbles and stones and 15 to 30 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
8 to 32 inches—very gravelly clay; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13);

estimated Unified classification—GC; estimated AASHTO classification—A-2, A-7
32 to 42 inches—gravelly sandy loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1
42 to 50 inches—very gravelly sandy loam; 0 to 5 percent cobbles and stones and 50 to 75 percent pebbles (by weight); hard, friable; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1
50 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 4.9 to 6.6 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—3; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Nomara Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum, colluvium; source—andesite, quartzite, limestone, slate, argillite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, snowberry
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—20

Typical profile

0 to 4 inches—stony silt loam; 5 to 25 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 19 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 10 to 25 percent pebbles (by weight); massive; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
19 to 40 inches—very gravelly loam; 15 to 30 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; very hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
40 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 4.8 to 5.9 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests and shoulder slopes of mountains
Distinctive present vegetation: Idaho fescue, low sagebrush
Inclusion 2
Position on landscape: The crests and upper side slopes of mountains
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Eroded side slopes of mountains
Distinctive present vegetation: Utah juniper
Inclusion 4
Position on landscape: Drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Sumine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Gosumi soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Nomara soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Sumine soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily, slope
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Gosumi soil for selected uses and practices

Range seeding: Poor—erodes easily, slope
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Nomara soil for selected uses and practices

Range seeding: Poor—erodes easily, slope
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope, frost action
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Sumine—VIIs, nonirrigated; Gosumi—VIIs, nonirrigated; Nomara—VIIe, nonirrigated
Range site: Sumine—024X029N; Gosumi—024X027N; Nomara—024X021N

591—Trunk-Hoot association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,200 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Trunk very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—50 percent
• Hoot very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids very cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—6 percent
• Inclusion 2: Lithic Xerollic Haplargids very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Xeric Torriorthents cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent
• Inclusion 4: Lithic Torriorthents very cobbly loam, 30 to 50 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—2 percent

Characteristics of the Trunk Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, quartzite, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 3 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, SC, GC; estimated AASHTO classification—A-4, A-6
3 to 30 inches—gravelly clay; 0 to 10 percent cobbles

and stones and 40 to 50 percent pebbles (by weight); subangular blocky structure; very hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7

30 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 22 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Hoot Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, rhyolite, quartzite, phyllite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 55 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

4 to 14 inches—extremely gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2

14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex foot slopes
Distinctive present vegetation: Sandberg bluegrass, Wyoming big sagebrush

Inclusion 2
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush

Inclusion 3
Position on landscape: Concave toe slopes adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 4
Position on landscape: Convex, eroded, south-facing mountainsides
Distinctive present vegetation: Bottlebrush squirreltail, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Trunk soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope

Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Hoot soil for selected uses and practices

Range seeding: Poor—small stones, too arid
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Trunk—VIIs, nonirrigated; Hoot—VIIs, nonirrigated
Range site: Trunk—024X005N; Hoot—024X002N

592—Trunk-Pocan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Trunk stony loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—45 percent
• Pocan stony loam, 30 to 50 percent slopes—Xerollic Camborthids, fine-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Golsum very cobbly loam, 30 to 50 percent slopes—Aridic Calcic Argixerolls, clayey-skeletal, montmorillonitic, frigid—6 percent
• Inclusion 2: Lithic Argixerolls very cobbly loam, 30 to 50 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, mesic—1 percent

Characteristics of the Trunk Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—quartzite, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, downy rabbitbrush, Thurber needlegrass

Typical profile

0 to 3 inches—stony loam; 5 to 15 percent cobbles and stones and 20 to 40 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, GM-GC, CL, CL-ML; estimated AASHTO classification—A-4, A-6
3 to 30 inches—gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); subangular blocky structure; very hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 22 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Pocan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—quartzite, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, downy rabbitbrush, Thurber needlegrass
Rock fragments on the surface: Kind—cobbles, stones; percentage of surface covered—10

Typical profile

0 to 10 inches—stony loam; 5 to 10 percent cobbles and stones and 0 to 10 percent pebbles (by weight); subangular blocky structure; soft, very friable; neutral (pH 7.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

10 to 26 inches—gravelly loam; 10 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, GC, CL; estimated AASHTO classification—A-6

26 to 48 inches—gravelly loam; 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, GC; estimated AASHTO classification—A-6

48 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 4.7 to 6.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—3; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes on mountains
Distinctive present vegetation: Mountain big sagebrush
Inclusion 2
Position on landscape: Convex shoulder slopes of mountains
Distinctive present vegetation: Snowberry, mountain big sagebrush
Inclusion 3
Position on landscape: Scattered small peaks and ridges
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Toe slopes adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Pocan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Trunk soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, slope, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Pocan soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer

Interpretive Groups

Capability classification: Trunk—VIIe, nonirrigated; Pocan—VIIs, nonirrigated
Range site: Trunk—024X005N; Pocan—024X005N

596—Trunk-Burrita association

Map Unit Setting

Position on landscape: Mountains

Elevation: 4,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Trunk very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—60 percent
• Burrita very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Typic Nadurargids very cobbly loam, 15 to 30 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—10 percent
• Inclusion 2: Rock outcrop—5 percent

Characteristics of the Trunk Soil

Position on landscape: Side slopes on mountains
Parent material: Kind—residuum; source—quartzite, chert, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, cheatgrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—40

Typical profile

0 to 3 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, SC, GC; estimated AASHTO classification—A-4, A-6
3 to 30 inches—gravelly clay; 0 to 10 percent cobbles and stones and 40 to 50 percent pebbles (by weight); subangular blocky structure; very hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 22 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Burrita Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum, colluvium; source—chert, quartzite, sandstone, shale
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, cheatgrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 8 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
8 to 17 inches—very gravelly clay; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex foot slopes of mountains

Distinctive present vegetation: Shadscale

Inclusion 2

Position on landscape: Scattered small peaks and ridges

Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Trunk soil for selected uses and practices

Range seeding: Poor—large stones

Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones

Shallow excavations: Severe—depth to bedrock, slope

Local roads and streets: Severe—low strength, shrink-swell, slope

Roadfill: Poor—depth to bedrock, low strength, slope

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, slope

Pond reservoir areas: Severe—slope

Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Burrita soil for selected uses and practices

Range seeding: Poor—droughty, large stones

Daily cover for landfill: Poor—depth to bedrock, small stones

Shallow excavations: Severe—depth to bedrock

Local roads and streets: Severe—depth to bedrock

Roadfill: Poor—depth to bedrock

Sand: Improbable source—excess fines, large stones

Gravel: Improbable source—excess fines, large stones

Topsoil: Poor—depth to bedrock, small stones

Pond reservoir areas: Severe—depth to bedrock, slope

Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Trunk—VIIs, nonirrigated; Burrita—VIIs, nonirrigated

Range site: Trunk—024X005N; Burrita—024X005N

598—Trunk-Oxcorel Variant-Bojo association

Map Unit Setting

Position on landscape: Mountains

Elevation: 4,500 to 6,500 feet

Average annual precipitation: About 8 inches

Average annual air temperature: About 48 degrees F

Frost-free period: About 110 days

Composition

Major components:

- Trunk very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—45 percent
- Oxcorel Variant cobbly loam, 30 to 50 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—20 percent
- Bojo very cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, loamy, mixed, mesic—20 percent

Contrasting inclusions:

- Inclusion 1: Xerollic Haplargids very cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—10 percent
- Inclusion 2: Xeric Torriorthents very cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
- Inclusion 3: Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—1 percent
- Inclusion 4: Rock outcrop—1 percent

Characteristics of the Trunk Soil

Position on landscape: The upper side slopes of mountains

Parent material: Kind—residuum; source—quartzite, chert, shale

Slope features: Length—long; shape—convex

Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, bottlebrush squirreltail

Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—25

Typical profile

0 to 3 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, SC, GC; estimated AASHTO classification—A-4, A-6

3 to 30 inches—gravelly clay; 0 to 10 percent cobbles and stones and 40 to 50 percent pebbles (by weight); subangular blocky structure; very hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7

30 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 22 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Oxcorel Variant Soil

Position on landscape: The lower side slopes of mountains
Parent material: Kind—residuum; source—chert, shale, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 4 inches—cobbly loam; 15 to 40 percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 32 inches—clay; 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
32 to 55 inches—clay loam; 10 to 20 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—CL; estimated AASHTO classification—A-6
55 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 7.8 to 9.8 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Bojo Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, bud sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—cobbles, gravel, stones; percentage of surface covered—45

Typical profile

0 to 3 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
3 to 10 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 15 to 35 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6
10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 5 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: About 4 to 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The lower side slopes of mountains
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush
Inclusion 2
Position on landscape: Foot slopes adjacent to channels
Distinctive present vegetation: Pine bluegrass, basin big sagebrush
Inclusion 3
Position on landscape: Convex shoulder slopes
Distinctive present vegetation: Black sagebrush
Inclusion 4
Position on landscape: Scattered small peaks and ridges
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Oxcorel Variant soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Trunk soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, erodes easily
Daily cover for landfill: Poor—slope, thin layer
Shallow excavations: Severe—slope
Local roads and streets: Poor—low strength, slope, shrink-swell
Roadfill: Poor—thin layer, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—thin layer, slope, excess sodium
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—thin layer, excess sodium

Ratings and restrictive features of the Bojo soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Trunk—VIIs, nonirrigated; Oxcorel Variant—VIIs, nonirrigated; Bojo—VIIs, nonirrigated
Range site: Trunk—024X005N; Oxcorel Variant—024X002N; Bojo—024X026N

599—Trunk-Burrita-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Trunk stony loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—40 percent
• Burrita very stony loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent

• Inclusion 2: Xeric Torriorthents stony loam, 15 to 30 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Typic Torriorthents very stony loam, 30 to 50 percent slopes—Typic Torriorthents, clayey-skeletal, montmorillonitic, mesic—5 percent

Characteristics of the Trunk Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—quartzite, chert, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Typical profile

0 to 3 inches—stony loam; 5 to 15 percent cobbles and stones and 20 to 40 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, GM-GC, CL, CL-ML; estimated AASHTO classification—A-4, A-6
3 to 30 inches—gravelly clay; 0 to 10 percent cobbles and stones and 20 to 50 percent pebbles (by weight); subangular blocky structure; very hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 22 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Burrita Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 8 inches—very stony loam; 25 to 40 percent cobbles and stones and 35 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
8 to 17 inches—very gravelly clay; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated Unified classification—A-2, A-7
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.8 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Crests and side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex shoulder slopes of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 2
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Bottlebrush squirreltail, shadscale

Inclusion 3
Position on landscape: Convex foot slopes of mountains
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Trunk soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, slope, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Burrita soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Trunk—VIIe, nonirrigated; Burrita—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Trunk—024X005N; Burrita—024X005N

600—Valmy fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Inset fans
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Valmy fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Camborthids fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Weso very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Valmy Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium with a loess cap high in content of volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Black greasewood, basin wildrye, basin big sagebrush
Rock fragments on the surface: Kind—gravel; percentage of surface covered—10

Typical profile

0 to 3 inches—fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 20 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified very fine sandy loam to gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—3

Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave inset fans adjacent to channels
Distinctive present vegetation: Black greasewood, basin wildrye
Inclusion 2
Position on landscape: Slightly convex fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Valmy soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Valmy soil for selected uses and practices

Range seeding: Poor—excess salt, too arid
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Moderate—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, soil blowing
Terraces and diversions: Soil blowing

Interpretive Groups

Capability classification: IIs, irrigated, and VIIc, nonirrigated
Range site: 024X022N

610—Weso very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Weso very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Yipor silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—6 percent
• Inclusion 2: Valmy fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—2 percent
• Inclusion 3: Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Weso Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bottlebrush squirreltail, bud sagebrush

Typical profile

0 to 7 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
7 to 12 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML, SM, SM-SC; estimated AASHTO classification—A-4
12 to 60 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.7); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None

Permeability: Moderate
Available water capacity: 8.0 to 10.4 inches
Water-supplying capacity: About 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex fan skirts
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Slightly concave fan skirts
Distinctive present vegetation: Black greasewood, basin big sagebrush
Inclusion 3
Position on landscape: Slightly concave fan skirts
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Weso soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Weso soil for selected uses and practices

Range seeding: Poor—too arid, excess salt
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, area reclaim, thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Excess salt
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

614—Weso silt loam, moderately saline-sodic, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Weso silt loam, moderately saline-sodic, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Weso silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Weso Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Black greasewood, bud sagebrush, horsebrush

Typical profile

0 to 7 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
7 to 60 inches or more—very fine sandy loam; 5 to 25 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.7); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate

Available water capacity: 8.0 to 10.4 inches
Water-supplying capacity: About 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex fan skirts
Distinctive present vegetation: Bud sagebrush, shadscale, bottlebrush squirreltail
Inclusion 2
Position on landscape: Slightly concave fan skirts
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Weso soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Weso soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

615—Weso-Misad-Beoska association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,100 to 4,650 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Weso very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—45 percent
• Misad gravelly very fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—25 percent
• Beoska gravelly very fine sandy loam, 4 to 15 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Misad very fine sandy loam, moderately saline-alkali, 4 to 15 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Whirlo gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Durixerollic Camborthids gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 4: Entic Durorthids gravelly very fine sandy loam, 2 to 8 percent slopes—Entic Durorthids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Weso Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, spiny hopsage

Typical profile

0 to 7 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 60 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.7); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13);

estimated Unified classification—ML, CL-ML, SM, SM-SC; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 8.0 to 10.0 inches
Water-supplying capacity: About 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Misad Soil

Position on landscape: Inset fans
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, spiny hopsage

Typical profile

0 to 11 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SM-SC, GM, GM-GC; estimated AASHTO classification—A-2, A-4

11 to 28 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2

28 to 60 inches—extremely gravelly loamy sand; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 4.5 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, spiny hopsage
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—32

Typical profile

0 to 13 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

13 to 25 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.7); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

25 to 44 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

44 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, dissected fan skirts
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Concave inset fans
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 3
Position on landscape: Drainageways
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: The convex upper part of inset fans
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Weso soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Misad soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Weso soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, area reclaim, thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Excess salt, slope
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Misad soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, soil blowing, slope
Terraces and diversions: Too sandy, soil blowing

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—slope
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, excess salt
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—excess sodium, excess salt
Drainage: Deep to water
Irrigation: Slope, excess sodium, excess salt
Terraces and diversions: Erodes easily, slope

Interpretive Groups

Capability classification: Weso—IIIe, irrigated, and VIIc, nonirrigated; Misad—IIIe, irrigated, and VIIs, nonirrigated; Beoska—IVe, irrigated, and VIIs, nonirrigated
Range site: Weso—024X002N; Misad—024X002N; Beoska—024X002N

652—Burrita-Hoot-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Burrita very cobbly loam, 30 to 50 percent stones—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—40 percent
• Hoot very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Trunk very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—10 percent
• Inclusion 2: Xerollic Haplargids, very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Burrita Soil

Position on landscape: North-, east-, and west-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, quartzite, sandstone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 8 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
8 to 17 inches—very gravelly clay; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Hoot Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 55 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
4 to 14 inches—extremely gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 6 inches

Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Crests and side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex lower part of mountainsides
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Inclusion 2
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Burrita soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, large stones, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Hoot soil for selected uses and practices

Range seeding: Poor—too arid, large stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Burrita—VIIe, nonirrigated; Hoot—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Burrita—024X005N; Hoot—024X002N

653—Burrita-Burnborough association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 46 degrees F
Frost-free period: About 90 days

Composition

Major components:
• Burrita very cobbly loam, 50 to 75 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—45 percent
• Burnborough very gravelly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
Contrasting inclusions:
• Inclusion 1: Burrita very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 2: Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Rock outcrop—4 percent
• Inclusion 4: Xeric Torriorthents very cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—1 percent

Characteristics of the Burrita Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, quartzite, sandstone, shale
Slope features: Length—long; shape—convex

Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 8 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
8 to 17 inches—very gravelly clay; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.8 inches
Water-supplying capacity: About 8 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Burnborough Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, rhyolite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Thurber needlegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 13 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 40 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, SM-SC; estimated AASHTO classification—A-2
13 to 60 inches—very gravelly loam; 15 to 25 percent cobbles and stones and 40 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC-SC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 5.1 to 6.9 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: Crests and side slopes of mountains
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Concave toe slopes adjacent to drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Wildlife habitat

Wildlife habitat elements

Suitability of the Burrita soil for named elements: Wild

herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burnborough soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Burrita soil for selected uses and practices

Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines, large stones
Gravel: Improbable source—excess fines, large stones
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Burnborough soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Burrita—VIIs, nonirrigated; Burnborough—VIIs, nonirrigated
Range site: Burrita—024X028N; Burnborough—024X021N

660—Oxcorel-Beoska-Whirlo association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 8 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—30 percent
• Beoska gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—30 percent
• Whirlo gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids cobbly loam, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Typic Torrifluvents gravelly very fine sandy loam, 0 to 4 percent slopes—Typic Torrifluvents, fine-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Typic Torriorthents, 0 to 4 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—2 percent
• Inclusion 4: Xerollic Camborthids cobbly loam, 15 to 30 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—1 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, cheatgrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, cheatgrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—32

Typical profile

0 to 13 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
13 to 25 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.7); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
25 to 44 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
44 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, cheatgrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—40

Typical profile

0 to 7 inches—gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, GM; estimated AASHTO classification—A-4
7 to 11 inches—very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
11 to 60 inches—very gravelly sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); weak fine subangular structure; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches

Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans adjacent to drainageways
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Drainageways
Distinctive present vegetation: Basin big sagebrush
Inclusion 3
Position on landscape: Slightly convex fan skirts adjacent to alluvial flats
Distinctive present vegetation: Black greasewood
Inclusion 4
Position on landscape: Side slopes of fan piedmont remnants adjacent to drainageways
Distinctive present vegetation: Bottlebrush, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt
Drainage: Deep to water
Irrigation: Slope, excess sodium, excess salt
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Whirlo soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Favorable

Interpretive Groups

Capability classification: Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Beoska—IIIe, irrigated, and VIIs, nonirrigated; Whirlo—IIIe, irrigated, and VIIc, nonirrigated

Range site: Oxcorel—024X002N; Beoska—024X002N; Whirlo—024X002N

661—Oxcorel-Orovada association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—60 percent
• Orovada gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Snapp gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—8 percent
• Inclusion 2: Dun Glen very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—7 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.3); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—15

Typical profile

0 to 6 inches—gravelly very fine sandy loam; 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
6 to 15 inches—loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
15 to 60 inches or more—very fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex upper part of fan piedmont remnants adjacent to mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex inset fans
Distinctive present vegetation: Bottlebrush squirreltail, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Wildlife habitat elements

Suitability of the Orovada soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Orovada soil for selected uses and practices

Range seeding: Fair—too arid, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Orovada—IIIe, irrigated, and VIc, nonirrigated
Range site: Oxcorel—024X002N; Orovada—024X020N

662—Oxcorel-Whirlo-Trocken Variant association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—40 percent
• Whirlo very fine sandy loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—30 percent
• Trocken Variant very gravelly very fine sandy loam, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—20 percent

Contrasting inclusions:
• Inclusion 1: Snapp very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 2: Xerollic Camborthids loam, 2 to 8 percent slopes—Xerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Whirlo Soil

Position on landscape: Fan collars
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—40

Typical profile

0 to 11 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 30 inches—very gravelly fine sandy loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
30 to 60 inches—very gravelly sandy loam; 0 to 5 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GW-GM, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.9 to 5.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Trocken Variant Soil

Position on landscape: Inset fans

Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 5 inches—very gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 7.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
5 to 60 inches—stratified extremely gravelly loam to very gravelly loamy sand; 5 to 15 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderately rapid
Available water capacity: 3.2 to 5.0 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan piedmont remnants adjacent to mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: The smooth lower part of inset fans
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Whirlo soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Trocken Variant soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Shallow excavations: Moderate—too clayey
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Whirlo soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Trocken Variant soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding, frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Slope, droughty, excess salt
Terraces and diversions: Too sandy

Interpretive Groups

Capability classification: Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Whirlo—IIIe, irrigated, and VIIc, nonirrigated; Trocken Variant—IVs, irrigated, and VIIs, nonirrigated
Range site: Oxcorel—024X002N; Whirlo—024X002N; Trocken Variant—024X020N

663—Oxcorel-Weso-Beoska association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—45 percent
• Weso very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—25 percent
• Beoska very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Camborthids silt loam, 2 to 8 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 3: Snapp gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—3 percent
• Inclusion 4: Xerollic Camborthids cobbly loam, 15 to 30 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, cheatgrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Weso Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess

Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bottlebrush squirreltail, bud sagebrush

Typical profile

0 to 7 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
7 to 12 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
12 to 60 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.7); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 8.0 to 10.4 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—2

Typical profile

0 to 13 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
13 to 25 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
25 to 44 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
44 to 60 inches or more—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Inclusion 3
Position on landscape: Convex fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 4
Position on landscape: Side slopes of fan piedmont remnants adjacent to drainageways
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Weso soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Weso soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Fair—too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, area reclaim, thin layer
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Excess salt, slope
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess sodium, small stones, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Slope, soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Weso—IIIe, irrigated, and VIIc, nonirrigated; Beoska—IIIe, irrigated, and VIIs, nonirrigated
Range site: Oxcorel—024X002N; Weso—024X002N; Beoska—024X002N

664—Oxcorel-Golconda association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—50 percent
• Golconda silt loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Xeric Torriorthents silt loam, 2 to 8 percent slopes—Durorthidic Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

• Inclusion 2: Trocken Variant cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Golconda Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess and volcanic ash over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 23 inches—gravelly clay loam; 10 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
23 to 36 inches—strongly cemented duripan; massive; extremely hard, extremely firm
36 to 60 inches—very gravelly loamy coarse sand; 50 to 75 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GM, GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the Golconda soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Golconda soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, excess salt, small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, cemented pan, slope
Terraces and diversions: Cemented pan, erodes easily

Interpretive Groups

Capability classification: Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Golconda—IVe, irrigated, and VIIs, nonirrigated
Range site: Oxcorel—024X002N; Golconda—024X002N

666—Oxcorel-Trocken Variant-Snapp association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—40 percent
• Trocken Variant very gravelly loam, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—25 percent
• Snapp very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Adelaide silt loam, 2 to 8 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—8 percent
• Inclusion 2: Weso very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—7 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4

8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Trocken Variant Soil

Position on landscape: Fans skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 5 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

5 to 60 inches—stratified extremely gravelly loam to very gravelly loamy sand; 5 to 15 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.4); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderately rapid
Available water capacity: 3.2 to 5.0 inches
Water-supplying capacity: About 9 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Snapp Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, littleleaf horsebrush
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 9 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

9 to 28 inches—gravelly clay; 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.6); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, GC; estimated AASHTO classification—A-7

28 to 39 inches—gravelly clay loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7

39 to 60 inches—very gravelly loamy sand; 50 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 6.5 to 7.4 inches
Water-supplying capacity: About 9 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush
Inclusion 2
Position on landscape: Slightly convex fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Trocken Variant soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Snapp soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Trocken Variant soil for selected uses and practices

Range seeding: Poor—small stones, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Slope, droughty, excess salt
Terraces and diversions: Too sandy

Ratings and restrictive features of the Snapp soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Droughty, slope, soil blowing
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Trocken Variant—IVs, irrigated, and VIIs, nonirrigated; Snapp—IIIe, irrigated, and VIs, nonirrigated
Range site: Oxcorel—024X002N; Trocken Variant—024X020N; Snapp—024X005N

669—Oxcorel-Beoska association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—45 percent
• Beoska gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Trocken Variant cobbly loam, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—8 percent
• Inclusion 2: Snapp gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 3: Xerollic Camborthids cobbly loam, 15 to 30 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—32

Typical profile

0 to 13 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
13 to 25 inches—clay loam; 10 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
25 to 44 inches—stratified gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

44 to 60 inches—stratified extremely gravelly very fine sandy loam to very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Slightly convex fan piedmont remnants adjacent to foothills
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Convex side slopes of fan piedmont remnants adjacent to drainageways
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt
Drainage: Deep to water
Irrigation: Slope, excess sodium, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Oxcorel—IVe, irrigated, and VIIs, nonirrigated; Beoska—IIIe, irrigated, and VIIs, nonirrigated
Range site: Oxcorel—024X002N; Beoska—024X002N

670—Misad-Snapp-Oxcorel association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:

• Misad gravelly very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent

• Snapp gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—35 percent

• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—20 percent

Contrasting inclusions:

• Inclusion 1: Trocken Variant cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—9 percent

• Inclusion 2: Xerollic Haplargids cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—1 percent

Characteristics of the Misad Soil

Position on landscape: Fan skirts
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 11 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SM-SC, GM, GM-GC; estimated AASHTO classification—A-2, A-4

11 to 28 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2

28 to 60 inches—stratified very gravelly loamy sand to extremely gravelly coarse sand; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 4.5 inches
Water-supplying capacity: About 7 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Snapp Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—53

Typical profile

0 to 9 inches—gravelly very fine sandy loam; 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2

9 to 28 inches—gravelly clay; 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.6); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, GC; estimated AASHTO classification—A-7

28 to 39 inches—gravelly clay loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7

39 to 60 inches—very gravelly loamy sand; 50 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 6.5 to 7.4 inches

Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4
8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches or more—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush
Inclusion 2
Position on landscape: Side slopes of fan piedmont remnants adjacent to drainageways
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Misad soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Snapp soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Misad soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, soil blowing
Terraces and diversions: Too sandy, soil blowing

Ratings and restrictive features of the Snapp soil for selected uses and practices

Range seeding: Fair—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Droughty, percs slowly, slope
Terraces and diversions: Too sandy, soil blowing

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Interpretive Groups

Capability classification: Misad—IIIs, irrigated, and VIIs, nonirrigated; Snapp—IIIe, irrigated, and VIs, nonirrigated; Oxcorel—IVe, irrigated, and VIIs, nonirrigated
Range site: Misad—024X002N; Snapp—024X005N; Oxcorel—024X002N

673—Misad-Golconda-Tenabo association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Misad gravelly very fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent
• Golconda very fine sandy loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—30 percent
• Tenabo gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—25 percent
Contrasting inclusions:
• Inclusion 1: Trocken Variant extremely stony sandy loam, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—8 percent
• Inclusion 2: Typic Nadurargids extremely stony loam, 2 to 8 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—2 percent

Characteristics of the Misad Soil

Position on landscape: Fan skirts
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 11 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SM-SC, GM, GM-GC; estimated AASHTO classification—A-2, A-4
11 to 28 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2
28 to 60 inches—stratified very gravelly loamy sand to extremely gravelly coarse sand; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 4.5 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Golconda Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium high in content of volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 10 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
10 to 23 inches—gravelly clay loam; 25 to 45 percent pebbles (by weight); prismatic structure; very hard, very firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
23 to 36 inches—strongly cemented duripan; massive; extremely hard, extremely firm
36 to 60 inches—very gravelly loamy coarse sand; 50 to 75 percent pebbles (by weight); massive; very hard, firm; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GM, GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow
Available water capacity: 4.9 to 6.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Tenabo Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 5 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 40 to 50 percent pebbles (by weight); soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
5 to 17 inches—clay loam; 10 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6
17 to 24 inches—indurated duripan; massive; extremely hard, extremely firm
24 to 60 inches—stratified very gravelly sandy loam to extremely gravelly coarse sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 15 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderately slow
Available water capacity: 3.2 to 3.5 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D

Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex fan piedmont remnants
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Misad soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Golconda soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Tenabo soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Misad soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, soil blowing, slope
Terraces and diversions: Too sandy, soil blowing

Ratings and restrictive features of the Golconda soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—low strength
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim, excess sodium, small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, cemented pan, slope
Terraces and diversions: Cemented pan, erodes easily

Ratings and restrictive features of the Tenabo soil for selected uses and practices

Range seeding: Poor—too arid, excess sodium, too crusty
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Cemented pan, slope, excess sodium
Terraces and diversions: Too sandy, cemented pan

Interpretive Groups

Capability classification: Misad—IIIe, irrigated, and VIIs, nonirrigated; Golconda—IVe, irrigated, and VIIs, nonirrigated; Tenabo—IVe, irrigated, and VIIs, nonirrigated
Range site: Misad—024X002N; Golconda—024X002N; Tenabo—024X002N

675—Misad-Orovada-Snapp association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Misad gravelly very fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—40 percent
• Orovada very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—25 percent
• Snapp gravelly very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Camborthids loam, 0 to 2 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Golconda very fine sandy loam, 2 to 8 percent slopes—Haplic Nadurargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 3: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—1 percent
• Inclusion 4: Valmy fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—1 percent

Characteristics of the Misad Soil

Position on landscape: Fan skirts
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 11 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SM-SC, GM, GM-GC; estimated AASHTO classification—A-2, A-4
11 to 28 inches—stratified fine sandy loam to very gravelly sandy loam; 5 to 10 percent cobbles and stones and 40 to 60 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM, GM-GC, SM, SM-SC; estimated AASHTO classification—A-1, A-2
28 to 60 inches—stratified very gravelly loamy sand to extremely gravelly coarse sand; 5 to 10 percent cobbles and stones and 60 to 80 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.1 to 4.5 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Orovada Soil

Position on landscape: Fan skirts, fan aprons
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, Sandberg bluegrass

Typical profile

0 to 11 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 24 inches—loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
24 to 60 inches—stratified fine sandy loam to silt loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches

Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Snapp Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—53

Typical profile

0 to 9 inches—gravelly very fine sandy loam; 25 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2
9 to 28 inches—gravelly clay; 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.6); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, GC; estimated AASHTO classification—A-7
28 to 39 inches—gravelly clay loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 23 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7
39 to 60 inches—very gravelly loamy sand; 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 5.6 to 7.4 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan skirts
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex fan piedmont remnants
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Convex fan skirts
Distinctive present vegetation: Black greasewood
Inclusion 4
Position on landscape: Slightly convex fan skirts adjacent to alluvial flats
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Misad soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Orovada soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Snapp soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Misad soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim

Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, soil blowing, slope
Terraces and diversions: Too sandy, soil blowing

Ratings and restrictive features of the Orovada soil for selected uses and practices

Range seeding: Fair—too arid, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Slope, erodes easily, soil blowing
Terraces and diversions: Erodes easily, soil blowing

Ratings and restrictive features of the Snapp soil for selected uses and practices

Range seeding: Fair—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Droughty, percs slowly, slope
Terraces and diversions: Too sandy

Interpretive Groups

Capability classification: Misad—IIIe, irrigated, and VIIs, nonirrigated; Orovada—IIIe, irrigated, and VIe, nonirrigated; Snapp—IIIe, irrigated, and VIs, nonirrigated
Range site: Misad—024X002N; Orovada—024X020N; Snapp—024X005N

676—Misad Variant-Dun Glen-Misad Variant, strongly sloping, association

Map Unit Setting

Position on landscape: Fan skirts, beach plains
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Misad Variant gravelly very fine sandy loam, 2 to 8 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent
• Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—30 percent
• Misad Variant gravelly very fine sandy loam, 8 to 15 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Weso very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—10 percent
• Inclusion 2: Trocken Variant cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Less Sloping Misad Variant Soil

Position on landscape: Nondissected parts of beach terraces
Parent material: Loess over mixed alluvium high in content of volcanic ash
Slope features: Length—long; shape—plane to convex
Dominant present vegetation: Shadscale, winterfat, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—15

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
3 to 23 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); massive; slightly hard, very friable; very strongly alkaline (pH 9.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
23 to 60 inches—extremely gravelly coarse sandy loam; 5 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46);

estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 4.4 to 5.7 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Dun Glen Soil

Position on landscape: Fans skirts
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—plane
Dominant present vegetation: Winterfat, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 3 inches—silt loam; platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 10 inches—silt loam; 0 to 10 percent pebbles (by weight); angular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 60 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); massive; soft, friable; very strongly alkaline (pH 9.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—January through May
Permeability: Moderate
Available water capacity: 6.8 to 8.0 inches
Water-supplying capacity: About 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Strongly Sloping Misad Variant Soil

Position on landscape: Dissected parts of beach terraces
Parent material: Loess over mixed alluvium
Slope features: Length—short; shape—plane to convex
Dominant present vegetation: Shadscale, winterfat, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—15

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
3 to 23 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
23 to 60 inches—extremely gravelly coarse sandy loam; 5 to 10 percent cobbles and stones and 75 to 85 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 4.4 to 5.7 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low

Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan aprons
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the less sloping Misad Variant soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Dun Glen soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the strongly sloping Misad Variant soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the less sloping Misad Variant soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope, excess salt
Terraces and diversions: Excess salt

Ratings and restrictive features of the Dun Glen soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—small stones
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, flooding
Terraces and diversions: Erodes easily

Ratings and restrictive features of the strongly sloping Misad Variant soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Moderate—slope
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope, excess salt
Terraces and diversions: Slope, erodes easily

Interpretive Groups

Capability classification: The less sloping Misad Variant—IIIe, irrigated, and VIIs, nonirrigated; Dun Glen—IIIw, irrigated, and VIIw, nonirrigated; Misad Variant, strongly sloping—IVe, irrigated, and VIIs, nonirrigated
Range site: The less sloping Misad Variant—024X014N; Dun Glen—024X004N; Misad Variant, strongly sloping—024X014N

680—Bojo-Trunk-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Bojo very gravelly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—35 percent
• Trunk very cobbly loam, 30 to 50 percent slopes—

Xerollic Haplargids, fine, montmorillonitic, mesic—30 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Burrita very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—7 percent
• Inclusion 2: Xeric Torriorthents very cobbly loam, 50 to 75 percent slopes—Xeric Torriorthents, loamy, mixed (calcareous), mesic, shallow—4 percent
• Inclusion 3: Typic Haplargids cobbly loam, 30 to 50 percent slopes—Typic Haplargids, fine-loamy, mixed, mesic—2 percent
• Inclusion 4: Xerollic Camborthids cobbly loam, 8 to 15 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Bojo Soil

Position on landscape: Side slopes on mountains
Parent material: Kind—residuum; source—metamorphic or extrusive igneous rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, Sandberg bluegrass, rabbitbrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 3 inches—very gravelly loam; 10 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
3 to 10 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 5 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Trunk Soil

Position on landscape: Side slopes on mountains
Parent material: Kind—residuum; source—metamorphic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, bottlebrush squirreltail, Thurber needlegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 3 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard; friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, SC, GC; estimated AASHTO classification—A-4, A-6
3 to 30 inches—gravelly clay; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; very hard, firm; mildly alkaline (pH 7.7); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 22 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges

Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, shadscale
Inclusion 3
Position on landscape: Convex side slopes of foothills
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 4
Position on landscape: Convex side slopes of foothills
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Bojo soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Trunk soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, shrink-swell, slope
Roadfill: Poor—depth to bedrock, low strength, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bojo—VIIs, nonirrigated; Trunk—VIIs, nonirrigated
Range site: Bojo—024X026N; Trunk—024X005N

683—Bojo, steep-Hoot-Bojo association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Bojo very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—40 percent
• Hoot very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Bojo very cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Xeric Torriorthents cobbly loam, rarely flooded, 2 to 8 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Steep Bojo Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, bud sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—cobbles, gravel, stones; percentage of surface covered—45

Typical profile

0 to 3 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13);

estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

3 to 10 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6

10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 5 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Hoot Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, basalt, rhyolite, quartzite, phyllite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—61

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 55 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

4 to 14 inches—extremely gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2

14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Strongly Sloping Bojo Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, bud sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 3 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

3 to 10 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6

10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 5 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: About 6 inches
Runoff: Medium

Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Side slopes of mountains
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Narrow drainageways on mountainsides
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the steep Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the strongly sloping Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the steep Bojo soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Hoot soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the strongly sloping Bojo soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bojo, steep—VIIs, nonirrigated; Hoot—VIIs, nonirrigated; Bojo, strongly sloping—VIIs, nonirrigated
Range site: Bojo, steep—024X026N; Hoot—024X002N; Bojo, strongly sloping—024X026N

691—Chilper-Trocken-Jerval association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Chilper cobbly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—35 percent
• Trocken gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—30 percent
• Jerval cobbly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Bluewing cobbly loam, 0 to 4 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Mazuma silt loam, strongly saline-alkali, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Chilper Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bluegrass, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—17

Typical profile

0 to 3 inches—cobbly very fine sandy loam; 10 to 25 percent cobbles and stones and 15 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, GM, SM; estimated AASHTO classification—A-4
3 to 13 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 29 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
29 to 60 inches or more—extremely gravelly sandy loam; 0 to 10 percent cobbles and stones and 75 to 90 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 5.1 to 6.6 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—3; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Trocken Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Jerval Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—25

Typical profile

0 to 6 inches—cobbly very fine sandy loam; 25 to 40

percent cobbles and stones and 10 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

6 to 22 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); prismatic structure; hard, friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6

22 to 60 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.4); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 5.5 to 6.3 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Shadscale, bluegrass
Inclusion 2
Position on landscape: The slightly concave lower part of fan skirts
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Chilper soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Jerval soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Chilper soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Slope, percs slowly, erodes easily
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, small stones, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Jerval soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines

Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Slope, excess sodium
Terraces and diversions: Favorable

Interpretive Groups

Capability classification: Chilper—IVs, irrigated, and VIIs, nonirrigated; Trocken—VIIs, nonirrigated; Jerval—IIIe, irrigated, and VIIs, nonirrigated
Range site: Chilper—027X028N; Trocken—027X028N; Jerval—027X028N

701—Atlow-Wiskan association

Map Unit Setting

Position on landscape: Side slopes on mountains
Elevation: 5,000 to 6,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 100 days

Composition

Major components:
• Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—45 percent
• Wiskan very gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—40 percent
Contrasting inclusions:
• Inclusion 1: Lithic Torriorthents very cobbly loam, 50 to 75 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Linrose very gravelly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Xerollic Haplargids loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—3 percent
• Inclusion 4: Xeric Torriorthents cobbly loam, rarely flooded, 4 to 15 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—2 percent

Characteristics of the Atlow Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, argillite, shale, altered rhyolitic tuff, andesite
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—62

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
6 to 15 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: 4 to 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Wiskan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, argillite, siliceous volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, scattered Utah Juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—52

Typical profile

0 to 9 inches—very gravelly loam; 0 to 15 percent

cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4

9 to 35 inches—very gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

35 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.4 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The eroded upper side slopes of mountains
Distinctive present vegetation: Black sagebrush, Utah juniper

Inclusion 2
Position on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Idaho fescue

Inclusion 3
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, mountain big sagebrush

Inclusion 4
Position on landscape: Concave toe slopes adjacent to drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Atlow soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Wiskan soil for selected uses and practices

Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Atlow—VIIe, nonirrigated; Wiskan—VIIs, nonirrigated
Range site: Atlow—024X030N; Wiskan—024X031N

703—Atlow, steep-Daick-Atlow association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—40 percent
• Daick cobbly clay loam, 30 to 50 percent slopes—Typic Torriorthents, clayey, montmorillonitic (calcareous), mesic, shallow—30 percent
• Atlow very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—7 percent
• Inclusion 2: Xerollic Haplargids cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 3: Xerollic Haplargids cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Xeric Torriorthents cobbly loam, 30 to 50 percent slopes—Xeric Torriorthents, clayey, montmorillonitic, mesic, shallow—1 percent

Characteristics of the Steep Atlow Soil

Position on landscape: North-, east-, and west-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolite, tuff, chert, argillite, shale, volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—62

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
6 to 15 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Daick Soil

Position on landscape: South-facing side slopes of mountains and hills
Parent material: Kind—residuum; source—tuffaceous rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—20

Typical profile

0 to 4 inches—cobbly clay; 15 to 25 percent cobbles and stones and 10 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-7
4 inches—weathered bedrock

Soil and water features

Depth to bedrock: 4 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 0.5 to 0.6 inch
Water-supplying capacity: About 4 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High

Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Strongly Sloping Atlow Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—chert, rhyolitic tuff, argillite, shale, volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—62

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
6 to 15 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Indian ricegrass, black sagebrush

Inclusion 3
Position on landscape: Convex foot slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush

Inclusion 4
Position on landscape: Eroded side slopes of mountains
Distinctive present vegetation: Utah juniper

Other minor inclusions
• Areas on mountain crests

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the steep Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Daick soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the strongly sloping Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the steep Atlow soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Daick soil for selected uses and practices

Range seeding: Poor—too arid, droughty, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones

Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the strongly sloping Atlow soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Atlow, steep—VIIe, nonirrigated; Daick—VIIs, nonirrigated; Atlow, strongly sloping—VIIs, nonirrigated
Range site: Atlow, steep—024X030N; Daick—027X027N; Atlow, strongly sloping—024X030N

704—Atlow, steep-Hoot-Atlow association

Map Unit Setting

Position on landscape: Side slopes on mountains
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—45 percent
• Hoot very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—25 percent
• Atlow very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xerollic Haplargids very cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy, mixed, mesic—7 percent
• Inclusion 2: Rubble land—5 percent
• Inclusion 3: Duric Natrargids very cobbly loam, 4 to 15 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—3 percent

Characteristics of the Steep Atlow Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, argillite, shale, rhyolitic tuff, other volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—62

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6
6 to 15 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hoot Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, rhyolite, quartzite, phyllite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, spiny hopsage, Sandberg bluegrass

Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 55 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4

4 to 14 inches—extremely gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2

14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Strongly Sloping Atlow Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—chert, argillite, shale, rhyolitic tuff, other volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—62

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6

6 to 15 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing shoulder slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Side slopes of mountains
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Alluvial fans adjacent to foot slopes of mountains
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the steep Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the strongly sloping Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the steep Atlow soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Hoot soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the strongly sloping Atlow soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Atlow, steep—VIIe, nonirrigated; Hoot—VIIs, nonirrigated; Atlow, strongly sloping—VIIs, nonirrigated
Range site: Atlow, steep—024X030N; Hoot—024X002N; Atlow, strongly sloping—024X030N

750—Snapp-Oxcorel association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Snapp very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—50 percent
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Trocken Variant cobbly loam, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xeric Torriorthents loam, 0 to 4 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Snapp Soil

Position on landscape: The upper part of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 9 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
9 to 28 inches—gravelly clay; 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.6); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, GC; estimated AASHTO classification—A-7
28 to 39 inches—gravelly clay loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7

39 to 60 inches—very gravelly loamy sand; 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 5.6 to 7.4 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4

8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

34 to 60 inches or more—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush

Inclusion 2
Position on landscape: Slightly concave inset fans
Distinctive present vegetation: Basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Snapp soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Snapp soil for selected uses and practices

Range seeding: Fair—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source

Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Droughty, slope, soil blowing
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium
Terraces and diversions: Favorable

Interpretive Groups

Capability classification: Snapp—IIIe, irrigated, and VIs, nonirrigated; Oxcorel—IVe, irrigated, and VIIs, nonirrigated
Range site: Snapp—024X005N; Oxcorel—024X002N

751—Snapp-Sodhouse association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Snapp loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—60 percent
• Sodhouse very fine sandy loam, 2 to 8 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—30 percent
Contrasting inclusions:
• Inclusion 1: Trocken Variant cobbly loam, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—10 percent

Characteristics of the Snapp Soil

Position on landscape: The upper part of fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 9 inches—loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
9 to 28 inches—gravelly clay; 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.6); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, GC; estimated AASHTO classification—A-7
28 to 39 inches—gravelly clay loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-7
39 to 60 inches—very gravelly loamy sand; 50 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 5.6 to 7.4 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—3; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Sodhouse Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium and loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail

Typical profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
5 to 14 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
14 to 29 inches—indurated layer; massive; extremely hard, extremely firm
29 to 60 inches—extremely gravelly sandy loam; 5 to 20 percent cobbles and stones and 75 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate
Available water capacity: 1.5 to 2.2 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Snapp soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Sodhouse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Snapp soil for selected uses and practices

Range seeding: Fair—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Sodhouse soil for selected uses and practices

Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, area reclaim
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Snapp—IIIe, irrigated, and VIs, nonirrigated; Sodhouse—VIIs, nonirrigated
Range site: Snapp—024X005N; Sodhouse—024X002N

752—Snapp-Orovada association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Snapp very fine sandy loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—50 percent
• Orovada very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—40 percent
Contrasting inclusions:
• Inclusion 1: Fluvaquentic Torriorthents loam, 2 to 8 percent slopes—Fluvaquentic Torriorthents, coarse-loamy, mixed (calcareous), mesic—10 percent

Characteristics of the Snapp Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 9 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
9 to 28 inches—gravelly clay; 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.6); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, GC; estimated AASHTO classification—A-7
28 to 39 inches—gravelly clay loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL, GC; estimated AASHTO classification—A-6, A-7
39 to 60 inches—very gravelly loamy sand; 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 5.6 to 7.4 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—3; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Orovada Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail

Typical profile

0 to 11 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
11 to 29 inches—loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
29 to 60 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 8 inches

Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Narrow drainageways on fan piedmonts
Distinctive present vegetation: Basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Snapp soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Orovada soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Snapp soil for selected uses and practices

Range seeding: Fair—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too clayey
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Droughty, slope, soil blowing
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Orovada soil for selected uses and practices

Range seeding: Fair—too arid, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Small stones, thin layer
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, slope
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Snapp—IIIe, irrigated, and VIs, nonirrigated; Orovada—IIIe, irrigated, and VIe, nonirrigated
Range site: Snapp—024X005N; Orovada—024X020N

812—Boton-Playas association

Map Unit Setting

Position on landscape: Lake plain terraces
Elevation: 4,000 to 4,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 53 degrees F
Frost-free period: About 130 days

Composition

Major components:
• Boton silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—50 percent
• Playas—35 percent
Contrasting inclusions:
• Inclusion 1: Duric Camborthids silt loam, 0 to 2 percent slopes—Duric Camborthids, coarse-silty, mixed, mesic—5 percent
• Inclusion 2: Durorthidic Torriorthents silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Aquic Torriorthents silt loam, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Boton Soil

Position on landscape: Low coppice mounds on low-lying lake plain terraces
Parent material: Mixed alluvium influenced by loess and volcanic ash and overlying lacustrine sediments
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, black greasewood, bottlebrush squirreltail

Typical profile

0 to 3 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); slightly sodic or moderately

sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4

3 to 60 inches—silt loam; massive; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4, A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Playas

Position on landscape: Intercoppice mound areas on low-lying lake plain terraces
Slope features: Length—short; shape—concave

Contrasting Inclusions

Inclusion 1
Position on landscape: The slightly convex upper part of lake plain terraces adjacent to fan skirts
Distinctive present vegetation: Bluegrass, shadscale
Inclusion 2
Position on landscape: The slightly concave upper part of lake plain terraces adjacent to fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale
Inclusion 3
Position on landscape: The slightly convex lower part of lake plain terraces adjacent to playas
Distinctive present vegetation: Basin wildrye, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Boton soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Boton soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium, piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Boton—IIIs, irrigated, and VIIs, nonirrigated; Playas—VIIIs
Range site: Boton—027X024N

813—Batan-Wendane-Valmy association

Map Unit Setting

Position on landscape: Alluvial flats
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—40 percent
• Wendane silt loam, drained, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—25 percent
• Valmy silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents loamy sand, 2 to 8 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Durorthidic Xeric Torriorthents silt loam, 0 to 2 percent slopes—Durorthidic Xeric Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 3: Misad very gravelly very fine sandy loam, moderately saline-sodic, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Batan Soil

Position on landscape: Alluvial flats
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, seepweed

Typical profile

0 to 3 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 60 inches—stratified fine sandy loam to silty clay; massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic or strongly sodic (SAR more than 23); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Wendane Soil

Position on landscape: Alluvial flat remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Torrey quailbush, black greasewood, shadscale

Typical profile

0 to 11 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 60 inches—silt loam; massive; slightly hard, firm; strongly alkaline (pH 8.8); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—brief; months—December through May
Permeability: Moderately slow
Available water capacity: 10.2 to 12.0 inches
Water-supplying capacity: About 15 inches
Runoff: Ponded
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Valmy Soil

Position on landscape: Inset fans on alluvial flat remnants
Parent material: Loess over mixed loamy alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, basin big sagebrush, basin wildrye, rabbitbrush
Rock fragments on the surface: Kind—gravel; percentage of surface covered—10

Typical profile

0 to 3 inches—silt loam; 0 to 10 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 60 inches—stratified very fine sandy loam to gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow

Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Thin sand sheets over alluvial flats
Distinctive present vegetation: Inland saltgrass, black greasewood
Inclusion 2
Position on landscape: Narrow drainageways on alluvial flats
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 3
Position on landscape: Slightly convex alluvial flats adjacent to fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Batan soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Valmy soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Batan soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Excess salt
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Wendane soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, small stones
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings and restrictive features of the Valmy soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Moderate—seepage, small stones
Drainage: Deep to water
Irrigation: Droughty, erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Batan—IIc, irrigated, and VIIc, nonirrigated; Wendane—VIIs, nonirrigated; Valmy—IIIs, irrigated, and VIIs, nonirrigated
Range site: Batan—024X003N; Wendane—024X015N; Valmy—024X022N

814—Batan silt loam, moderately saline-sodic

Map Unit Setting

Position on landscape: Lake plains
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 6 inches

Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Batan silt loam, moderately saline-sodic, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Needle Peak silt loam, 0 to 2 percent slopes—Aquic Torriorthents, fine-silty, mixed (calcareous), mesic—8 percent
• Inclusion 2: Raglan silt loam, moderately saline-alkali, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—7

Characteristics of the Batan Soil

Position on landscape: Lake plain terraces
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, bud sagebrush

Typical profile

0 to 3 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 60 inches—stratified fine sandy loam to silty clay; massive; slightly hard, friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic or strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Drainageways
Distinctive present vegetation: Basin big sagebrush
Inclusion 2
Position on landscape: Smooth alluvial flats
Distinctive present vegetation: Shadscale, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Batan soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Batan soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too arid
Daily cover for landfill: Good
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium
Drainage: Deep to water
Irrigation: Excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

823—Trocken-Bluewing association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Trocken gravelly very fine sandy loam, 4 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—70 percent

• Bluewing very gravelly loamy sand, frequently flooded, 4 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Bluewing loamy sand, 4 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—6 percent
• Inclusion 2: Typic Haplargids gravelly sandy loam, 4 to 15 percent slopes—Typic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Genegraf loamy sand, 4 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—4 percent

Characteristics of the Trocken Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bluewing Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—long; shape—concave
Dominant present vegetation: Bailey greasewood, rabbitbrush, spiny hopsage, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—42

Typical profile

0 to 5 inches—very gravelly loamy sand; 10 to 25 percent cobbles and stones and 55 to 65 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP-SM; estimated AASHTO classification—A-1
5 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 0 to 25 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—November through September
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: A
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale
Inclusion 2
Position on landscape: Convex fan piedmont remnants adjacent to fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale

Inclusion 3
Position on landscape: Convex fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Bluewing soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, small stones, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, too sandy, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Trocken—VIIs, nonirrigated; Bluewing—VIIw, nonirrigated
Range site: Trocken—027X028N; Bluewing—027X022N

825—Trocken very gravelly very fine sandy loam, moderately saline-sodic, 2 to 4 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Trocken very gravelly very fine sandy loam, moderately saline-sodic, 2 to 4 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Yobe silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Torriorthents cobbly loam, rarely flooded, 2 to 4 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Trocken Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Black greasewood, Bailey greasewood, shadscale
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 3 inches—very gravelly very fine sandy loam; 0 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 6 inches
Runoff: Slow

Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave fan skirts
Distinctive present vegetation: Torrey quailbush, inland saltgrass
Inclusion 2
Position on landscape: Narrow drainageways on fan skirts
Distinctive present vegetation: Rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones, seepage
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—excess salt, slope, large stones

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: 027X024N

826—Trocken-Ragtown association

Map Unit Setting

Position on landscape: Fan skirts, lake plains
Elevation: 4,000 to 4,200 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Trocken very fine sandy loam, moderately saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—50 percent
• Ragtown loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Typic Camborthids loam, 0 to 2 percent slopes—Typic Camborthids, fine-loamy, mixed, mesic—9 percent
• Inclusion 2: Typic Camborthids silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—4 percent
• Inclusion 3: Playas—2 percent

Characteristics of the Trocken Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, seepweed
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—16

Typical profile

0 to 3 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 20 percent cobbles and stones and 50 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3

Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Ragtown Soil

Position on landscape: Lake plain terraces
Parent material: Lacustrine sediments derived from mixed rock sources
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical profile

0 to 7 inches—loam; 0 to 5 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
7 to 20 inches—silty clay loam; massive; slightly hard, friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
20 to 65 inches—stratified silty clay loam to clay; massive; slightly hard, friable; very strongly alkaline (pH 9.2); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—CL, CH, MH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 9.5 to 11.0 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave lake plain terraces adjacent to playas
Distinctive present vegetation: Black greasewood

Inclusion 2
Position on landscape: Slightly concave lake plain terraces
Distinctive present vegetation: Black greasewood

Inclusion 3
Position on landscape: Lake plains
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Ragtown soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—excess salt, seepage, large stones

Ratings and restrictive features of the Ragtown soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium, hard to pack

Interpretive Groups

Capability classification: Trocken—VIIs, nonirrigated; Ragtown—VIIs, nonirrigated
Range site: Trocken—027X024N; Ragtown—027X025N

827—Trocken gravelly very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major component:
• Trocken gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Typic Haplargids gravelly very fine sandy loam, 4 to 15 percent slopes—Typic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Mazuma silt loam, strongly saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Trocken Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan piedmont remnants adjacent to fan skirts
Distinctive present vegetation: Bailey greasewood
Inclusion 2
Position on landscape: Slightly concave inset fans
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: 027X028N

831—Benin-Yobe-Wendane association

Map Unit Setting

Position on landscape: Lake plains, alluvial flats
Elevation: 3,700 to 4,500 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Benin silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—40 percent
• Yobe silt loam, warm, occasionally flooded, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—30 percent
• Wendane silt loam, warm, drained, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Duric Camborthids silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—10 percent

Characteristics of the Benin Soil

Position on landscape: The upper part of lake plain terraces
Parent material: Loess over lacustrine sediments
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Shadscale, black greasewood, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—2

Typical profile

0 to 9 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; very strongly alkaline (pH 9.4); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
9 to 60 inches—clay; prismatic structure; hard, firm; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); strongly sodic (SAR 46); estimated Unified classification—CL, CH, MH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Very slow
Available water capacity: 8.7 to 9.9 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Yobe Soil

Position on landscape: Lake plain terraces
Parent material: Lacustrine sediments derived from mixed rock sources
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, basin wildrye, alkali sacaton

Typical profile

0 to 14 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6
14 to 60 inches—stratified very fine sandy loam to silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: November through May—36 to 60 inches; rest of year—60 inches
Flooding: Frequency—occasional; duration—brief; months—February through June
Permeability: Moderately slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 10 inches
Runoff: Ponded
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: High

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Silty alluvium derived from mixed sediments
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Torrey quailbush, black greasewood, basin wildrye

Typical profile

0 to 11 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 60 inches—silty clay loam; massive; slightly hard, firm; strongly alkaline (pH 8.8); slightly saline or

moderately saline (4 to 16 mmhos/cm); moderately sodic or strongly sodic (SAR 24 to 60); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—brief; months—December through May
Permeability: Moderately slow
Available water capacity: 10.0 to 12.0 inches
Water-supplying capacity: About 10 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex lake plain terraces adjacent to fan skirts
Distinctive present vegetation: Bailey greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Benin soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Yobe soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor; wetland plants—poor; shallow water areas—fair
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Benin soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—hard to pack
Drainage: Deep to water
Irrigation: Percs slowly, erodes easily
Terraces and diversions: Erodes easily, percs slowly

Ratings and restrictive features of the Yobe soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium, excess salt
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings and restrictive features of the Wendane soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Interpretive Groups

Capability classification: Benin—IVs, irrigated, and VIIs, nonirrigated; Yobe—VIIw, nonirrigated; Wendane—VIIs, nonirrigated
Range site: Benin—024X003N; Yobe—027X025N; Wendane—027X041N

900—Roca-Wiskan-Reluctan association

Map Unit Setting

Position on landscape: Side slopes of mountains
Elevation: 5,800 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—40 percent
• Wiskan very gravelly loam, 50 to 75 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—30 percent
• Reluctan gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Sumya very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, clayey-skeletal, montmorillonitic, nonacid, frigid—5 percent
• Inclusion 2: Xerollic Haplargids cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine, montmorillonitic, frigid—5 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Lithic Xerollic Haplargids very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—2 percent

Characteristics of the Roca Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolite, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—cobbles; percentage of surface covered—20

Typical profile

0 to 6 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
6 to 34 inches—very gravelly clay; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
34 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 3.6 to 4.5 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Wiskan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, argillite, siliceous volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, bottlebrush squirreltail, rabbitbrush, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—52

Typical profile

0 to 9 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
9 to 35 inches—very gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
35 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.4 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid

Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Reluctan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolite, other extrusive volcanic rocks
Slope features: Length—short; shape—concave
Dominant present vegetation: Mountain big sagebrush, snowberry, bluebunch wheatgrass, basin wildrye, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 9 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
9 to 25 inches—gravelly clay loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
25 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.4 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded side slopes of mountains
Distinctive present vegetation: Utah juniper
Inclusion 2
Position on landscape: South-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, basin big sagebrush
Inclusion 3
Position on landscape: Side slopes and crests of mountains
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Crests of mountains
Distinctive present vegetation: Low sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Roca soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Wiskan soil for selected uses and practices

Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Reluctan soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Roca—VIIs, nonirrigated; Wiskan—VIIs, nonirrigated; Reluctan—VIIe, nonirrigated
Range site: Roca—024X028N; Wiskan—024X031N; Reluctan—024X021N

901—Roca-Reluctan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,800 to 7,000 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—50 percent
• Reluctan gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—35 percent
Contrasting inclusions:
• Inclusion 1: Cleavage extremely gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Aridic Haploxerolls loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Aridic Argixerolls very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Roca Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolite, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, scattered Utah juniper
Rock fragments on the surface: Kind—cobbles; percentage of surface covered—20

Typical profile

0 to 6 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6
6 to 34 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
34 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 3.6 to 4.5 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Reluctan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolite, other extrusive volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, snowberry, bluebunch wheatgrass, basin wildrye,

Idaho fescue, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 9 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
9 to 25 inches—gravelly clay loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
25 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.4 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 2
Position on landscape: Scattered small peaks and ridges on mountains
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Convex, south-facing shoulder slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, basin big sagebrush
Inclusion 4
Position on landscape: Convex, north-facing shoulder slopes of mountains
Distinctive present vegetation: Low sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Roca soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Reluctan soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Roca—VIIs, nonirrigated; Reluctan—VIIe, nonirrigated
Range site: Roca—024X028N; Reluctan—024X021N

902—Roca-Reluctan-Sumya association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,800 to 7,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—30 percent
• Reluctan gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—30 percent
• Sumya very cobbly clay loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, clayey-skeletal, montmorillonitic, nonacid, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Wiskan very gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Cleavage extremely gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Mulhop very cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 4: Aridic Haploxerolls very cobbly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Roca Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, andesite, shale, rhyolite, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—cobbles; percentage of surface covered—20

Typical profile

0 to 6 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
6 to 34 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
34 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 3.6 to 4.5 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Reluctan Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolite, other extrusive volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, snowberry, bluebunch wheatgrass, basin wildrye, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 9 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
9 to 25 inches—gravelly clay loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
25 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.4 inches

Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Sumya Soil

Position on landscape: Eroded side slopes on mountains
Parent material: Kind—residuum; source—andesite, breccia
Slope features: Length—long; shape—concave to convex
Dominant present vegetation: Utah juniper, bluebunch wheatgrass, mountain big sagebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—43

Typical profile

0 to 4 inches—very cobbly clay loam; 25 to 45 percent cobbles and stones and 35 to 55 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
4 to 9 inches—very gravelly clay; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2
9 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 8 to 12 inches
Flooding: None
Permeability: Slow
Available water capacity: 0.5 to 0.8 inch
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex side slopes on mountains
Distinctive present vegetation: Black sagebrush
Inclusion 2
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 3
Position on landscape: Convex back slopes of mountains
Distinctive present vegetation: Utah juniper, black sagebrush
Inclusion 4
Position on landscape: Convex, north-facing foot slopes of mountains
Distinctive present vegetation: Basin big sagebrush, bluebunch wheatgrass
Other minor inclusions
• Scattered barren areas on small peaks and ridges
• Concave areas in stream channels that support basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Ratings of the Sumya soil for use as woodland

Site index for common trees: Utah juniper—20
Most important native understory plants: Wyoming big sagebrush, bluebunch wheatgrass, Thurber needlegrass

Wildlife habitat elements

Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Sumya soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; coniferous plants (nonirrigated)—poor

Ratings and restrictive features of the Roca soil for selected uses and practices

Range seeding: Poor—large stones, slope
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Reluctan soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Sumya soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Roca—VIIs, nonirrigated; Reluctan—VIIe, nonirrigated; Sumya—VIIs, nonirrigated
Range site: Roca—024X028N; Reluctan—024X021N; Sumya—024X052N
Woodland suitability group: Sumya—3R

903—Roca-Burnborough-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Roca very cobbly loam, 50 to 75 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—40 percent
• Burnborough very gravelly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Sumya very cobbly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, clayey-skeletal, montmorillonitic, nonacid, frigid—8 percent
• Inclusion 2: Cleavage very gravelly loam, 50 to 75 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—7 percent

Characteristics of the Roca Soil

Position on landscape: South- and west-facing mountain slopes
Parent material: Kind—residuum; source—chert, shale, siliceous conglomerate, andesite, rhyolite, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, scattered Utah juniper
Rock fragments on the surface: Kind—cobbles; percentage of surface covered—20

Typical profile

0 to 6 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
6 to 34 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
34 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow

Available water capacity: 3.6 to 4.5 inches
Water-supplying capacity: About 10 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Burnborough Soil

Position on landscape: North- and east-facing side slopes on mountains
Parent material: Kind—residuum; source—andesite, rhyolite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 13 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 40 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC, SM-SC; estimated AASHTO classification—A-2

13 to 60 inches—very gravelly loam; 15 to 25 percent cobbles and stones and 40 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 5.1 to 6.9 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Eroded side slopes on mountains
Distinctive present vegetation: Utah juniper
Inclusion 2
Position on landscape: Convex back slopes of mountains
Distinctive present vegetation: Low sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Burnborough soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Roca soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Burnborough soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Interpretive Groups

Capability classification: Roca—VIIs, nonirrigated; Burnborough—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Roca—024X028N; Burnborough—024X021N

905—Roca-Reluctan Variant association, steep

Map Unit Setting

Position on landscape: Mountain side slopes
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—55 percent
• Reluctan Variant gravelly silt loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, frigid—30 percent
Contrasting inclusions:
• Inclusion 1: Xerollic Haplargids cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 2: Durixerollic Camborthids cobbly loam, 8 to 15 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 3: Lithic Xerollic Haplargids very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Xeric Torriorthents cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, coarse-loamy, mixed, mesic—1 percent

Characteristics of the Roca Soil

Position on landscape: South-facing side slopes on mountains
Parent material: Kind—residuum; source—rhyolite, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—cobbles; percentage of surface covered—20

Typical profile

0 to 6 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
6 to 34 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
34 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 3.6 to 4.5 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Reluctan Variant Soil

Position on landscape: North- and east-facing side slopes on mountains
Parent material: Kind—residuum; source—chert, argillite, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, Idaho fescue, rabbitbrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—27

Typical profile

0 to 6 inches—gravelly silt loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, SM-SC, GM-GC; estimated AASHTO classification—A-4
6 to 34 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated

Unified classification—CL, SC, GC; estimated AASHTO classification—A-6
34 to 60 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-2, A-6, A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.1 to 8.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing shoulder slopes
Distinctive present vegetation: Thurber needlegrass, basin big sagebrush
Inclusion 2
Position on landscape: Convex foot slopes adjacent to fan piedmonts
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 4
Position on landscape: Concave foot slopes adjacent to channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan Variant soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Roca soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Reluctan Variant soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Roca—VIIs, nonirrigated; Reluctan Variant—VIIe, nonirrigated
Range site: Roca—024X028N; Reluctan Variant—024X033N

906—Roca-Reluctan Variant association, very steep

Map Unit Setting

Position on landscape: Mountain side slopes
Elevation: 5,800 to 6,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—60 percent
• Reluctan Variant gravelly silt loam, 50 to 75 percent

slopes—Xerollic Haplargids, fine-loamy, mixed, frigid—25 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—6 percent
• Inclusion 2: Lithic Xerollic Haplargids very cobbly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Lithic Torriorthents very cobbly loam, 30 to 50 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed, nonacid, frigid—3 percent
• Inclusion 4: Xeric Torriorthents very cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, coarse-loamy, mixed, mesic—1 percent

Characteristics of the Roca Soil

Position on landscape: South- and west-facing side slopes on mountains
Parent material: Kind—residuum; source—rhyolite, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—cobbles; percentage of surface covered—20

Typical profile

0 to 6 inches—very cobbly loam; 50 to 60 percent cobbles and stones and 15 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL; estimated AASHTO classification—A-6
6 to 34 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); angular blocky structure; hard, firm; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2
34 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 3.6 to 4.5 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Reluctan Variant Soil

Position on landscape: North- and east-facing side slopes on mountains
Parent material: Kind—residuum; source—chert, argillite, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—27

Typical profile

0 to 6 inches—gravelly silt loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, SM-SC, GM-GC; estimated AASHTO classification—A-4
6 to 34 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, SC, GC; estimated AASHTO classification—A-6
34 to 60 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM; estimated AASHTO classification—A-2, A-6, A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.1 to 8.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight

Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing side slopes on mountains
Distinctive present vegetation: Snowberry
Inclusion 2
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Bluebunch wheatgrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: All aspects of eroded side slopes on mountains
Distinctive present vegetation: Utah juniper
Inclusion 4
Position on landscape: Concave toe slopes adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Roca soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan Variant soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Roca soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Reluctan Variant soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Interpretive Groups

Capability classification: Roca—VIIs, nonirrigated; Reluctan Variant—VIIe, nonirrigated
Range site: Roca—024X028N; Reluctan Variant—024X033N

911—Tenabo-Daick-Oxcorel association

Map Unit Setting

Position on landscape: Fan piedmonts, hills
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Tenabo cobbly very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—45 percent
• Daick stony clay loam, 30 to 50 percent slopes—Typic Torriorthents, clayey, montmorillonitic (calcareous), mesic, shallow—20 percent
• Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Cleaver gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—7 percent
• Inclusion 2: Typic Natrargids gravelly very fine sandy loam, 30 to 50 percent slopes—Typic Natrargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 3: Orovada very fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Tenabo Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—20

Typical profile

0 to 5 inches—cobbly very fine sandy loam; 25 to 40 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 17 inches—clay loam; 5 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6

17 to 24 inches—indurated layer; massive; extremely hard, extremely firm

24 to 60 inches—extremely gravelly sandy loam; 5 to 25 percent cobbles and stones and 70 to 80 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 9 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate
Available water capacity: 3.2 to 3.5 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Daick Soil

Position on landscape: Side slopes of hills
Parent material: Kind—residuum; source—tuffaceous rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—28

Typical profile

0 to 4 inches—stony clay; 10 to 15 percent cobbles and stones and 10 to 35 percent pebbles (by weight); platy structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-7

4 inches—weathered bedrock

Soil and water features

Depth to bedrock: 4 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 0.5 to 0.6 inch
Water-supplying capacity: About 4 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Oxcorel Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—24

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-4

8 to 34 inches—clay loam; 0 to 5 percent cobbles and stones and 10 to 20 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

34 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to

23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 6.1 to 8.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan piedmont remnants
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 2
Position on landscape: Convex hillsides
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 3
Position on landscape: Narrow drainageways on fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Tenabo soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Daick soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Oxcorel soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Tenabo soil for selected uses and practices

Range seeding: Poor—too arid, large stones, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, too sandy
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Drainage: Deep to water
Irrigation: Cemented pan, slope, erodes easily
Terraces and diversions: Large stones, cemented pan

Ratings and restrictive features of the Daick soil for selected uses and practices

Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Oxcorel soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, excess sodium, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, excess sodium, slope
Terraces and diversions: Favorable

Interpretive Groups

Capability classification: Tenabo—IVs, irrigated, and VIIs, nonirrigated; Daick—VIIs, nonirrigated; Oxcorel—IVe, irrigated, and VIIs, nonirrigated
Range site: Tenabo—024X002N; Daick—027X027N; Oxcorel—024X002N

930—Bubus-Benin-Wendane association

Map Unit Setting

Position on landscape: Alluvial flats, lake plains
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—45 percent
• Benin silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—25 percent
• Wendane silt loam, drained, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Misad gravelly very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Batan silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, fine-silty, mixed (calcareous), mesic—4 percent
• Inclusion 3: Cumulic Haplaquolls silt loam, 0 to 2 percent slopes—Cumulic Haplaquolls, fine-silty, mixed, mesic—1 percent

Characteristics of the Bubus Soil

Position on landscape: Alluvial flat remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, black greasewood
Rock fragments on the surface: Kind—gravel; percentage of surface covered—2

Typical profile

0 to 13 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 60 inches—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic or strongly sodic (SAR more than 23); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Benin Soil

Position on landscape: Lake plain terraces
Parent material: Loess over lacustrine sediments
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, black greasewood
Rock fragments on the surface: Kind—gravel; percentage of surface covered—2

Typical profile

0 to 9 inches—silt loam; 0 to 5 percent pebbles (by weight); platy structure; slightly hard, very friable; very strongly alkaline (pH 9.4); moderately saline (8 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
9 to 60 inches—clay; prismatic structure; hard, firm; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CH, MH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Very slow
Available water capacity: 8.7 to 9.9 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Wendane Soil

Position on landscape: Alluvial flats
Parent material: Loess over mixed sediments
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Torrey quailbush, black greasewood

Typical profile

0 to 11 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 60 inches—silt loam; massive; slightly hard, firm; very strongly alkaline (pH 9.2); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—brief; months—December through May
Permeability: Moderately slow
Available water capacity: 10.2 to 12.0 inches
Water-supplying capacity: About 15 inches
Runoff: Ponded
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex alluvial flats bordering fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 2
Position on landscape: Slightly convex lake plain terraces
Distinctive present vegetation: Bottlebrush squirreltail, shadscale
Inclusion 3
Position on landscape: Slightly concave alluvial flats
Distinctive present vegetation: Silver buffaloberry

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bubus soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Benin soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Bubus soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Benin soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—hard to pack
Drainage: Deep to water
Irrigation: Erodes easily, excess salt, percs slowly
Terraces and diversions: Percs slowly, erodes easily

Ratings and restrictive features of the Wendane soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium

Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Interpretive Groups

Capability classification: Bubus—IIs, irrigated, and VIIs, nonirrigated; Benin—IVs, irrigated, and VIIs, nonirrigated; Wendane—VIIs, nonirrigated
Range site: Bubus—024X003N; Benin—024X003N; Wendane—024X015N

931—Bubus-Valmy association

Map Unit Setting

Position on landscape: Basin floors
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—60 percent
• Valmy loamy fine sand, loamy substratum, 2 to 8 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Weso very fine sandy loam, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—7 percent
• Inclusion 2: Benin silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—4 percent
• Inclusion 3: Aeric Halaquepts silt loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-silty, mixed (calcareous), mesic—2 percent
• Inclusion 4: Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Bubus Soil

Position on landscape: Lake plain terraces
Parent material: Loess over mixed alluvium and lacustrine sediments high in content of pyroclastic material
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, black greasewood, bud sagebrush
Rock fragments on the surface: Kind—gravel; percentage of surface covered—2

Typical profile

0 to 13 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 60 inches—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic or strongly sodic (SAR more than 23); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Valmy Soil

Position on landscape: Remnants of inset fans
Parent material: Loess over mixed alluvium and lacustrine sediments
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, basin big sagebrush, basin wildrye
Rock fragments on the surface: Kind—gravel; percentage of surface covered—10

Typical profile

0 to 3 inches—loamy fine sand; 0 to 10 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.0); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM; estimated AASHTO classification—A-2
3 to 60 inches—stratified very fine sandy loam to

gravelly coarse sandy loam; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—2
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex lake plain terraces adjacent to fan skirts
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 2
Position on landscape: Slightly concave lagoons
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, black greasewood
Inclusion 3
Position on landscape: Slightly concave lake plain terraces adjacent to playas
Distinctive present vegetation: Torrey quailbush
Inclusion 4
Position on landscape: Slightly concave lagoons behind offshore bars
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bubus soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Valmy soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Bubus soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Valmy soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Moderate—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, slope, soil blowing
Terraces and diversions: Soil blowing

Interpretive Groups

Capability classification: Bubus—IIs, irrigated, and VIIs, nonirrigated; Valmy—IIIe, irrigated, and VIIs, nonirrigated
Range site: Bubus—024X003N; Valmy—024X022N

932—Bubus very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Lake plain terraces
Elevation: 4,000 to 4,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Bubus very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Valmy fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Torriorthents silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 3: Typic Torripsamments fine sand, 2 to 8 percent slopes—Typic Torripsamments, mixed, mesic—2 percent

Characteristics of the Bubus Soil

Position on landscape: Lake plain terraces
Parent material: Loess over mixed alluvium high in content of pyroclastic material
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, black greasewood, bud sagebrush
Rock fragments on the surface: Kind—gravel; percentage of surface covered—2

Typical profile

0 to 13 inches—very fine sandy loam; 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 60 inches—stratified sandy loam to silt loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); strongly sodic (SAR more than 23); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 9.0 to 10.2 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave lake plain terraces
Distinctive present vegetation: Basin wildrye, black greasewood, big sagebrush
Inclusion 2
Position on landscape: Slightly concave lake plain terraces adjacent to playas
Distinctive present vegetation: Basin wildrye
Inclusion 3
Position on landscape: Sand dunes
Distinctive present vegetation: Fourwing saltbush, Nevada dalea

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bubus soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Bubus soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

950—Puffer, very steep-Xine-Puffer association

Map Unit Setting

Position on landscape: Mountains

Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 100 days

Composition

Major components:
• Puffer very cobbly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—45 percent
• Xine gravelly loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—25 percent
• Puffer very cobbly loam, 4 to 15 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Typic Haplargids very cobbly loam, 30 to 50 percent slopes—Typic Haplargids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Mulhop very cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 4: Xeric Torriorthents loam, 2 to 8 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—1 percent

Characteristics of the Very Steep Puffer Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2
11 to 12 inches—weathered bedrock
12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Xine Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—31

Typical profile

0 to 10 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
10 to 38 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2, A-4
38 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 4.1 inches

Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Less Sloping Puffer Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2
11 to 12 inches—weathered bedrock
12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: South-facing foot slopes
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: Ridgetops
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Eroded mountainsides
Distinctive present vegetation: Utah juniper
Inclusion 4
Position on landscape: Stream channels on mountainsides
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the very steep Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Xine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the less sloping Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the very steep Puffer soil for selected uses and practices

Range seeding: Poor—droughty, small stones, large stones
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Xine soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—large stones, slope, depth to bedrock
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the less sloping Puffer soil for selected uses and practices

Range seeding: Poor—droughty, small stones, large stones
Daily cover for landfill: Poor—depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Puffer, very steep—VIIs, nonirrigated; Xine—VIIs, nonirrigated; the less sloping Puffer—VIIs, nonirrigated
Range site: Puffer, very steep—024X030N; Xine—024X021N; the less sloping Puffer—024X030N

953—Puffer-Bojo-Rock outcrop association

Map Unit Setting

Position on landscape: Mountain side slopes
Elevation: 4,500 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Puffer very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—40 percent
• Bojo very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—30 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents very cobbly loam, 30 to 50 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic, shallow—10 percent
• Inclusion 2: Bojo very cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, loamy, mixed, mesic—5 percent

Characteristics of the Puffer Soil

Position on landscape: Shoulder slopes and back slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2
11 to 12 inches—weathered bedrock
12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Bojo Soil

Position on landscape: Back slopes of mountains
Parent material: Kind—residuum; source—mixed metamorphic and volcanic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Wyoming big sagebrush, shadscale, Sandberg bluegrass, rabbitbrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 3 inches—very cobbly loam; 30 to 50 percent

cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

3 to 10 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6

10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 5 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: About 4 to 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges on mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex shoulder slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush, shadscale, bluegrass

Inclusion 2
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Wyoming big sagebrush, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Puffer soil for selected uses and practices

Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Bojo soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Puffer—VIIs, nonirrigated; Bojo—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Puffer—024X030N; Bojo—024X026N

954—Puffer-Xine-Rock outcrop association

Map Unit Setting

Position on landscape: Mountain side slopes
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 100 days

Composition

Major components:
• Puffer very cobbly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—40 percent
• Xine gravelly silt loam, 50 to 75 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—25 percent

• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Linrose gravelly loam, 50 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Mulhop very cobbly loam, 50 to 75 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—7 percent

Characteristics of the Puffer Soil

Position on landscape: South- and west-facing mountainsides
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-4
11 to 12 inches—weathered bedrock
12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Xine Soil

Position on landscape: North- and east-facing side slopes on mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—31

Typical profile

0 to 10 inches—gravelly silt loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
10 to 38 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4, A-1
38 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 4.1 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered areas on side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, north-facing shoulder slopes of mountains

Distinctive present vegetation: Cusick bluegrass, Idaho fescue, black sagebrush

Inclusion 2

Position on landscape: Convex, south-facing shoulder slopes of mountains
Distinctive present vegetation: Utah juniper

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Xine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Puffer soil for selected uses and practices

Range seeding: Poor—droughty, small stones, slope, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Xine soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—large stones, slope, depth to bedrock
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Puffer—VIIs, nonirrigated; Xine—VIIe, nonirrigated; Rock outcrop—VIIIs
Range site: Puffer—024X030N; Xine—024X021N

955—Puffer-Mulhop-Rock outcrop association

Map Unit Setting

Position on landscape: Mountain side slopes
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 85 days

Composition

Major components:
• Puffer very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—45 percent
• Mulhop very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—20 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents loam, rarely flooded, 4 to 15 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), frigid—5 percent
• Inclusion 2: Xine gravelly silt loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Eastwell very gravelly loam, 4 to 15 percent slopes—Haploxerollic Durorthids, loamy-skeletal, mixed, mesic, shallow—5 percent

Characteristics of the Puffer Soil

Position on landscape: Back slopes and foot slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately

alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2

11 to 12 inches—weathered bedrock

12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Mulhop Soil

Position on landscape: Shoulder slopes and back slopes of mountains
Parent material: Kind—residuum; source—limestone
Slope features: Length—long; shape—convex
Dominant present vegetation: Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

6 to 17 inches—very gravelly loam; 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6

17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges on mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave toe slopes adjacent to channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Inclusion 2
Position on landscape: Concave pockets on north-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue

Inclusion 3
Position on landscape: Convex toe slopes of mountains
Distinctive present vegetation: Indian ricegrass, black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, woodland

Ratings of the Mulhop soil for use as woodland

Site index for common trees: Utah juniper—20
Most important native understory plants: Black sagebrush, bottlebrush squirreltail, Sandberg bluegrass, basin wildrye

Wildlife habitat elements

Suitability of the Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Mulhop soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—poor; coniferous plants (nonirrigated)—fair

Ratings and restrictive features of the Puffer soil for selected uses and practices

Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Mulhop soil for selected uses and practices

Range seeding: Poor—small stones, droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Puffer—VIIs, nonirrigated; Mulhop—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Puffer—024X030N; Mulhop—024X075N
Woodland suitability group: Mulhop—3R

956—Puffer-Linrose-Iver association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 90 days

Composition

Major components:
• Puffer very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—45 percent
• Linrose very gravelly loam, 50 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—20 percent
• Iver gravelly silt loam, 50 to 75 percent slopes—Pachic Haploxerolls, coarse-loamy, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Cleavage very gravelly loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Mulhop very cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Sumine very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Rock outcrop—3 percent

Characteristics of the Puffer Soil

Position on landscape: South- and west-facing side slopes on mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2
11 to 12 inches—weathered bedrock
12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D

Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Linrose Soil

Position on landscape: North- and east-facing side slopes on mountains
Parent material: Kind—residuum; source—shale, chert
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—51

Typical profile

0 to 10 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2, A-4
10 to 23 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
23 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.0 to 3.4 inches
Water-supplying capacity: About 10 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Iver Soil

Position on landscape: North-facing side slopes on mountains
Parent material: Kind—residuum; source—sandstone, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—25

Typical profile

0 to 4 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4
4 to 20 inches—silt loam; 0 to 25 percent pebbles (by weight); massive; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
20 to 31 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4
31 to 60 inches—very cobbly loam; 45 to 55 percent cobbles and stones and 15 to 50 percent pebbles (by weight); massive; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 7.6 to 8.7 inches
Water-supplying capacity: About 12 inches
Runoff: Very rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1

Position on landscape: Convex, north-facing side slopes on mountains
Distinctive present vegetation: Low sagebrush

Inclusion 2
Position on landscape: Eroded side slopes on mountains
Distinctive present vegetation: Utah juniper
Inclusion 3
Position on landscape: Concave, south-facing side slopes on mountains
Distinctive present vegetation: Oceanspray
Inclusion 4
Position on landscape: The tops and side slopes of mountains
Other minor inclusions
• Areas in drainageways that support basin wildrye and basin big sagebrush

Major Uses

Current uses: Wildlife habitat, rangeland

Wildlife habitat elements

Suitability of the Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Iver soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Puffer soil for selected uses and practices

Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Linrose soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Iver soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—slope, large stones
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Puffer—VIIs, nonirrigated; Linrose—VIIs, nonirrigated; Iver—VIIe, nonirrigated
Range site: Puffer—024X030N; Linrose—024X042N; Iver—024X023N

957—Puffer, very steep-Atlow-Puffer association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,400 to 6,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Puffer very flaggy loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—40 percent
• Atlow very flaggy loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—30 percent
• Puffer very flaggy loam, 15 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Lithic Torriorthents very channery loam, 50 to 75 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xerollic Camborthids channery loam, 2 to 8 percent slopes—Xerollic Camborthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Xerollic Haplargids very channery loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, mesic—3 percent
• Inclusion 4: Typic Camborthids channery loam, 2 to 8

percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—3 percent

Characteristics of the very steep Puffer Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—shale, limestone
Slope features: Length—long; shape—plane to convex
Dominant present vegetation: Black sagebrush, shadscale, spiny hopsage, pine bluegrass, scattered Utah juniper
Rock fragments on the surface: Kind—channers, flagstones; percentage of surface covered—60

Typical profile

0 to 4 inches—very flaggy loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
4 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2
11 to 12 inches—weathered bedrock
12 inches—weathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Atlow Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—shale, sandstone, mudstone
Slope features: Length—long; shape—plane to convex
Dominant present vegetation: Black sagebrush, shadscale, ephedra, bottlebrush squirreltail, pine bluegrass
Rock fragments on the surface: Kind—channers, flagstones; percentage of surface covered—45

Typical profile

0 to 4 inches—very flaggy loam; 30 to 45 percent cobbles and stones and 35 to 55 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-6, A-4
4 to 15 inches—very gravelly clay loam; 5 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Moderately Steep Puffer Soil

Position on landscape: Mountain side slopes, foothills
Parent material: Kind—residuum; source—shale, limestone
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, shadscale, spiny hopsage, pine bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—channers, flagstones; percentage of surface covered—60

Typical profile

0 to 4 inches—very flaggy loam; 25 to 40 percent

cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

4 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2

11 to 12 inches—weathered bedrock

12 inches—weathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: North-facing side slopes of mountains
Distinctive present vegetation: Desert needlegrass
Inclusion 2
Position on landscape: Concave valley fans on mountains
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave, north- and east-facing side slopes of mountains
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: Convex foot slopes of mountains
Distinctive present vegetation: Shadscale, bud sagebrush
Other minor inclusions
• Barren areas of rock outcrop on the crests and upper side slopes of mountains

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the very steep Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the moderately steep Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the very steep Puffer soil for selected uses and practices

Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Atlow soil for selected uses and practices

Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the moderately steep Puffer soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Puffer, very steep—VIIs, nonirrigated; Atlow—VIIs, nonirrigated; Puffer, moderately steep—VIIs, nonirrigated
Range site: Puffer, very steep—027X0032N; Atlow—027X032N; Puffer, moderately steep—027X032N

960—Findout-Puffer-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Composition

Major components:
• Findout very gravelly loam, 30 to 50 percent slopes—Lithic Calciorthids, loamy-skeletal, carbonatic, mesic—45 percent
• Puffer very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Findout very cobbly loam, 4 to 15 percent slopes—Lithic Calciorthids, loamy-skeletal, carbonatic, mesic—5 percent

Characteristics of the Findout Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, dolomite
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail, desert needlegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 4 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 45 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, GM; estimated AASHTO classification—A-1, A-2
4 to 8 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
8 to 14 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 45 to 65 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
14 to 18 inches—weathered bedrock
18 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 8 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.8 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Puffer Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4

2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2
11 to 12 inches—weathered bedrock
12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: The tops and side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex mountain tops
Distinctive present vegetation: Desert needlegrass, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Findout soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Findout soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Puffer soil for selected uses and practices

Range seeding: Poor—droughty, small stones, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Findout—VIIs, nonirrigated; Puffer—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Findout—027X017N; Puffer—024X030N

980—Mazuma very fine sandy loam, 0 to 4 percent slopes

Map Unit Setting

Position on landscape: Lake plains
Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 120 days

Composition

Major component:
• Mazuma very fine sandy loam, 0 to 4 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Playas—5 percent
• Inclusion 2: Typic Torriorthents silt loam, 0 to 2 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 3: Trocken gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Mazuma Soil

Position on landscape: Lake plain terraces

Parent material: Alluvium and lacustrine material derived from mixed rock sources
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush

Typical profile

0 to 10 inches—very fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 60 inches or more—stratified gravelly coarse sand to silt loam; 0 to 20 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic or strongly sodic (SAR 23 to 100); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 8.5 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth and slightly concave lake plain terraces
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Channels
Distinctive present vegetation: Torrey quailbush
Inclusion 3
Position on landscape: Slightly convex fan skirts
Distinctive present vegetation: Bluegrass, shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Excess salt
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 027X028N

981—Mazuma fine sandy loam, strongly saline-sodic, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 4,300 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 120 days

Composition

Major component:
• Mazuma fine sandy loam, strongly saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Mazuma silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—10 percent
• Inclusion 2: Typic Torriorthents loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Mazuma Soil

Position on landscape: Fan skirts adjacent to alluvial flats
Parent material: Alluvium and lacustrine material derived from mixed rock sources

Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical profile

0 to 13 inches—fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46 to 100); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
13 to 22 inches—sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
22 to 60 inches—stratified silt loam to gravelly coarse sand; 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 5.7 to 6.9 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth fan skirts
Distinctive present vegetation: Bluegrass, shadscale, bud sagebrush
Inclusion 2
Position on landscape: Convex fan piedmont remnants adjacent to fan skirts
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: 027X025N

983—Mazuma-Swingler-Trocken association

Map Unit Setting

Position on landscape: Lake plains, beach plains
Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Composition

Major components:
• Mazuma silt loam, moderately saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—50 percent
• Swingler silt loam, strongly saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—20 percent
• Trocken gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Bluewing very cobbly loam, rarely flooded, 0 to 2 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 2: Hawsley fine sand, 2 to 8 percent slopes—Typic Torripsamments, mixed, mesic—5 percent

Characteristics of the Mazuma Soil

Position on landscape: The higher lake plain terraces

Parent material: Lacustrine sediments derived from mixed rock sources
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, seepweed, Bailey greasewood

Typical profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 22 inches—sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
22 to 60 inches—stratified silt loam to gravelly coarse sand; 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 5.7 to 6.9 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Swingler Soil

Position on landscape: The lower lake plain terraces
Parent material: Silty alluvium over mixed lacustrine deposits
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, seepweed, Bailey greasewood

Typical profile

0 to 6 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4
6 to 60 inches or more—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); moderately saline or strongly saline (more than 8 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 9.1 to 11.0 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Trocken Soil

Position on landscape: Offshore bars
Parent material: Mixed gravelly and sandy alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches

Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans
Distinctive present vegetation: Rabbitbrush
Inclusion 2
Position on landscape: Low dunes and sand sheets
Distinctive present vegetation: Fourwing saltbush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Swingler soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess sodium, excess salt
Drainage: Deep to water
Irrigation: Excess sodium
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Swingler soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, thin layer, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Mazuma—IIIs, irrigated, and VIIs, nonirrigated; Swingler—VIIw, nonirrigated; Trocken—VIIs, nonirrigated
Range site: Mazuma—027X024N; Swingler—027X024N; Trocken—027X028N

984—Mazuma-Bluewing-Woolsey association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 3,900 to 4,000 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Mazuma fine sandy loam, strongly saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—35 percent
• Bluewing very gravelly sandy loam, 2 to 8 percent

slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—30 percent
• Woolsey gravelly fine sandy loam, 2 to 8 percent slopes—Typic Haplargids, coarse-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Hawsley fine sand, moderately wet, 0 to 4 percent slopes—Typic Torripsamments, mixed, mesic—5 percent
• Inclusion 2: Ragtown silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—4 percent
• Inclusion 3: Bluewing very cobbly sandy loam, 0 to 4 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—4 percent
• Inclusion 4: Playas—2 percent

Characteristics of the Mazuma Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, black greasewood, seepweed

Typical profile

0 to 13 inches—fine sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
13 to 22 inches—sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
22 to 60 inches—stratified silt loam to gravelly coarse sand; 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 5.7 to 6.9 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bluewing Soil

Position on landscape: Fan collars
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—42

Typical profile

0 to 5 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1
5 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: A
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Woolsey Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium and lacustrine sediments
Slope features: Length—long; shape—convex

Dominant present vegetation: Bailey greasewood, shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—42

Typical profile

0 to 9 inches—gravelly fine sandy loam; 25 to 50 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2
9 to 14 inches—gravelly sandy loam; 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, GM, SM; estimated AASHTO classification—A-2
14 to 60 inches—stratified sandy loam and gravelly sandy loam; 15 to 50 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, ML, SM; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 7.3 to 8.7 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex sand sheets
Distinctive present vegetation: Indian ricegrass, black greasewood
Inclusion 2
Position on landscape: Slightly convex lake plain terraces adjacent to the lower part of fan skirts
Distinctive present vegetation: Inland saltgrass, black greasewood
Inclusion 3
Position on landscape: Drainageways
Distinctive present vegetation: Indian ricegrass, shadscale
Inclusion 4
Position on landscape: The plane lower part of lake plain terraces
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Bluewing soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Woolsey soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, small stones, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Large stones, too sandy

Ratings and restrictive features of the Woolsey soil for selected uses and practices

Range seeding: Poor—too arid
Daily cover for landfill: Fair—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Mazuma—VIIs, nonirrigated; Bluewing—IVs, irrigated, and VIIs, nonirrigated; Woolsey—VIIs, nonirrigated
Range site: Mazuma—027X025N; Bluewing—027X018N; Woolsey—027X018N

985—Mazuma-Toulon-Chumall association

Map Unit Setting

Position on landscape: Lake plains, beach plains
Elevation: 3,600 to 4,200 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Composition

Major components:
• Mazuma silt loam, moderately saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—40 percent
• Toulon very gravelly loam, 2 to 8 percent slopes—Typic Camborthids, sandy-skeletal, mixed, mesic—30 percent
• Chumall silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Isolde fine sand, 4 to 15 percent slopes—Typic Torripsamments, mixed, mesic—5 percent
• Inclusion 2: Parran silty clay, 0 to 2 percent slopes—Typic Salorthids, fine, montmorillonitic, mesic—5 percent

Characteristics of the Mazuma Soil

Position on landscape: Lake plain terraces
Parent material: Lacustrine sediments derived from mixed rock sources
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, black greasewood, seepweed, Bailey greasewood

Typical profile

0 to 13 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 22 inches—sandy loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
22 to 60 inches—stratified silt loam to gravelly coarse sand; 15 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM, ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 5.7 to 6.9 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Toulon Soil

Position on landscape: Barrier bars
Parent material: Waterworn pebbles, sand, and a small amount of silt derived from mixed rock sources
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood
Rock fragments on the surface: Kind—gravel; percentage of surface covered—75

Typical profile

0 to 5 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

5 to 18 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 60 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

18 to 60 inches—stratified gravelly coarse sand to extremely cobbly coarse sand; 25 to 50 percent cobbles and stones and 60 to 75 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Rapid
Available water capacity: 2.3 to 4.2 inches
Water-supplying capacity: About 5 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Chumall Soil

Position on landscape: Lagoons
Parent material: Silty alluvium over lacustrine sediments derived from mixed sources
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, Bailey greasewood, seepweed, shadscale

Typical profile

0 to 7 inches—silt loam; platy structure; very hard, friable; moderately alkaline (pH 8.4); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL-ML, CL; estimated AASHTO classification—A-4, A-6

7 to 14 inches—silt loam; platy structure; hard, friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

14 to 60 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL-ML, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 10.5 to 12.1 inches
Water-supplying capacity: About 5 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Sand dunes
Distinctive present vegetation: Indian ricegrass, black greasewood

Inclusion 2
Position on landscape: The smooth central part of lagoons
Distinctive present vegetation: Inland saltgrass, black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Toulon soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Chumall soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight

Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Excess sodium
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Toulon soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Large stones, droughty, slope
Terraces and diversions: Large stones, too sandy

Ratings and restrictive features of the Chumall soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Severe—low strength
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Severe—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Interpretive Groups

Capability classification: Mazuma—IIIs, irrigated, and VIIs, nonirrigated; Toulon—IVs, irrigated, and VIIs, nonirrigated; Chumall—VIIs, nonirrigated
Range site: Mazuma—027X024N; Toulon—027X030N; Chumall—027X024N

986—Mazuma-Trocken association

Map Unit Setting

Position on landscape: Fan skirts, beach plains
Elevation: 3,800 to 4,500 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Mazuma very fine sandy loam, 2 to 4 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—70 percent
• Trocken gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Typic Natrargids gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Natrargids, fine-loamy, mixed, mesic—5 percent
• Inclusion 2: Bluewing gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Typic Torriorthents silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—3 percent
• Inclusion 4: Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Mazuma Soil

Position on landscape: Fan skirts
Parent material: Alluvium and lacustrine material derived from mixed rock sources
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical profile

0 to 10 inches—very fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 60 inches—stratified gravelly coarse sand to silt loam; 0 to 20 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic or strongly sodic (SAR 24 to 100); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 8.5 inches

Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Trocken Soil

Position on landscape: Barrier bars
Parent material: Mixed alluvium
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4

3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex upper part of fan skirts adjacent to fan piedmont remnants
Distinctive present vegetation: Bailey greasewood
Inclusion 2
Position on landscape: Narrow drainageways on fan skirts
Distinctive present vegetation: Bailey greasewood
Inclusion 3
Position on landscape: The slightly concave lower part of fan skirts
Distinctive present vegetation: Sickle saltbush
Inclusion 4
Position on landscape: Slightly concave lagoons
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Trocken soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Slope, excess salt
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim

Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones
Drainage: Deep to water
Irrigation: Slope, large stones, droughty
Terraces and diversions: Too sandy, large stones

Interpretive Groups

Capability classification: Mazuma—IIc, irrigated, and VIIc, nonirrigated; Trocken—IVs, irrigated, and VIIs, nonirrigated
Range site: Mazuma—027X028N; Trocken—027X028N

987—Mazuma-Yipor association

Map Unit Setting

Position on landscape: Lake plains
Elevation: 4,000 to 4,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Mazuma very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—50 percent
• Yipor silt loam, warm, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Playas—5 percent
• Inclusion 2: Bluewing cobbly loam, frequently flooded, 2 to 4 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Hawsley fine sand, 0 to 2 percent slopes—Typic Torripsamments, mixed, mesic—3 percent
• Inclusion 4: Typic Camborthids silt loam, frequently flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—3 percent

Characteristics of the Mazuma Soil

Position on landscape: The lower part of lake plain terraces
Parent material: Alluvium and lacustrine material derived from mixed rock sources
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical profile

0 to 10 inches—very fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 60 inches—stratified gravelly coarse sand to silt loam; 0 to 20 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic or strongly sodic (SAR 24 to 100); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 8.5 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Yipor Soil

Position on landscape: Lake plain terraces
Parent material: Mixed silty alluvium influenced by loess
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Black greasewood, shadscale, bottlebrush squirreltail

Typical profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 60 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 9.7 to 11.5 inches
Water-supplying capacity: About 6 inches
Runoff: Ponded

Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The lower part of lake plain terraces
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Channels
Distinctive present vegetation: Rubber rabbitbrush, Bailey greasewood
Inclusion 3
Position on landscape: Slightly convex sand sheets
Distinctive present vegetation: Nevada dalea, Indian ricegrass
Inclusion 4
Position on landscape: Slightly concave inset fans
Distinctive present vegetation: Winterfat

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Yipor soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Excess salt
Terraces and diversions: Erodes easily, too sandy

Ratings and restrictive features of the Yipor soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Mazuma—IIc, irrigated, and VIIc, nonirrigated; Yipor—IIIs, irrigated, and VIIs, nonirrigated
Range site: Mazuma—027X028N; Yipor—027X024N

988—Mazuma very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Mazuma very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Durorthidic Torriorthents silt loam, 0 to 2 percent slopes—Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—8 percent
• Inclusion 2: Hawsley sand, moderately wet, 4 to 15 percent slopes—Typic Torripsamments, mixed, mesic—3 percent
• Inclusion 3: Typic Torriorthents silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 4: Xeric Torriorthents cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—1 percent

Characteristics of the Mazuma Soil

Position on landscape: Fan skirts
Parent material: Alluvium and lacustrine material derived from mixed rock sources
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical profile

0 to 10 inches—very fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
10 to 60 inches—stratified gravelly coarse sand to silt loam; 0 to 20 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic or strongly sodic (SAR 24 to 100); estimated Unified classification—SM; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 6.3 to 8.5 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The slightly concave lower part of fan skirts
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Sand dunes
Distinctive present vegetation: Nevada dalea, Indian ricegrass
Inclusion 3
Position on landscape: Slightly concave fan skirts
Distinctive present vegetation: Bailey greasewood, Indian ricegrass
Inclusion 4
Position on landscape: Channels
Distinctive present vegetation: Rubber rabbitbrush, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Mazuma soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Mazuma soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too sandy, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Excess salt, erodes easily, slope
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: IIIe, irrigated, and VIIc, nonirrigated
Range site: 027X028N

990—Argenta very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Lake plains
Elevation: 3,500 to 4,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 120 days

Composition

Major component:
• Argenta very fine sandy loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-loamy, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Aquic Durorthidic Torriorthents silt loam, 0

to 2 percent slopes—Aquic Durorthidic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Torrifluvents loam, 0 to 2 percent slopes—Typic Torrifluvents, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Aquentic Durorthids silt loam, 0 to 2 percent slopes—Aquentic Durorthids, fine-silty, mixed, mesic—5 percent

Characteristics of the Argenta Soil

Position on landscape: Lake plain terraces
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, rabbitbrush, basin wildrye, inland saltgrass
Rock fragments on the surface: Kind—gravel; percentage of surface covered—3

Typical profile

0 to 6 inches—very fine sandy loam; platy structure; soft, very friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
6 to 36 inches—fine sandy loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML; estimated AASHTO classification—A-4
36 to 60 inches—gravelly sandy loam; 35 to 45 percent pebbles (by weight); platy structure; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic or slightly sodic (SAR less than 23); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: February through July—36 to 42 inches; rest of year—more than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 7.7 to 8.9 inches
Water-supplying capacity: About 11 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth fringes of lake plain terraces
Distinctive present vegetation: Black greasewood
Inclusion 2
Position on landscape: Slightly concave, narrow drainageways on lake plain terraces
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 3
Position on landscape: Smooth fringes of lake plain terraces
Distinctive present vegetation: Basin wildrye, alkali sacaton

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Argenta soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Argenta soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess salt, excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Soil blowing, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: IIIw, irrigated, and VIIw, nonirrigated
Range site: 024X007N

1020—Wholan very fine sandy loam, rarely flooded, 0 to 2 percent slopes

Map Unit Setting

Position on landscape: Fan skirts
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Wholan very fine sandy loam, rarely flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Misad very gravelly loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Orovada very fine sandy loam, 0 to 2 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—5 percent

Characteristics of the Wholan Soil

Position on landscape: Fan skirts
Parent material: Silty alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Shadscale, bud sagebrush

Typical profile

0 to 5 inches—very fine sandy loam; platy structure; slightly hard, very friable; moderately alkaline (pH 7.9); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 60 inches—silt loam; weak fine subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 9.7 to 10.9 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Channels
Distinctive present vegetation: Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Wholan soil for named elements: Grain and seed crops (irrigated)—good; grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Wholan soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X002N

1030—Wendane-Yobe association

Map Unit Setting

Position on landscape: Lake plains
Elevation: 4,300 to 4,600 feet

Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Wendane silt loam, drained, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—55 percent
• Yobe silt loam, occasionally flooded, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Weso very fine sandy loam, moderately saline-alkali, 0 to 2 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—5 percent
• Inclusion 2: Misad gravelly very fine sandy loam, 0 to 2 percent slopes—Durorthidic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Wendane Soil

Position on landscape: The higher lake plain terraces
Parent material: Silty alluvium derived from mixed sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Torrey quailbush, black greasewood

Typical profile

0 to 11 inches—silt loam; platy structure; slightly hard, friable; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
11 to 60 inches—silty clay loam; massive; slightly hard, firm; very strongly alkaline (pH 9.2); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches (artificially drained)
Flooding: Frequency—occasional; duration—brief; months—December through May
Permeability: Moderately slow
Available water capacity: 10.2 to 12.0 inches
Water-supplying capacity: About 12 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Yobe Soil

Position on landscape: The lower lake plain terraces
Parent material: Mixed lake sediments
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, basin wildrye

Typical profile

0 to 14 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6
14 to 60 inches—stratified very fine sandy loam to silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: November through May—36 to 60 inches; rest of year—more than 60 inches
Flooding: Frequency—occasional; duration—brief; months—February through June
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 15 inches
Runoff: Ponded
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Fan skirts adjacent to lake plains
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: Fan skirts
Distinctive present vegetation: Shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Wendane soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Yobe soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Wendane soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—piping, excess salt, excess sodium

Ratings and restrictive features of the Yobe soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium, excess salt
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Wendane—VIIw, nonirrigated; Yobe—VIIw, nonirrigated
Range site: Wendane—024X015N; Yobe—024X011N

1070—Hoot-Burrita-Bojo association

Map Unit Setting

Position on landscape: Mountain side slopes
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 46 degrees F
Frost-free period: About 100 days

Composition

Major components:
• Hoot very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—40 percent
• Burrita very cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, mesic—30 percent
• Bojo very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Bojo very cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, loamy, mixed, mesic—6 percent
• Inclusion 2: Rock outcrop—5 percent
• Inclusion 3: Xeric Torriorthents loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 4: Rubble land—1 percent

Characteristics of the Hoot Soil

Position on landscape: South- and west-facing side slopes on mountains
Parent material: Kind—residuum; source—andesite and related volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 65 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
4 to 14 inches—gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Burrita Soil

Position on landscape: North-facing side slopes on mountains
Parent material: Kind—residuum; source—interbedded chert, quartzite, sandstone, shale, and metamorphic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 8 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GC; estimated AASHTO classification—A-4
8 to 17 inches—very gravelly clay; 10 to 55 percent cobbles and stones and 45 to 70 percent pebbles (by weight); subangular blocky structure; hard, firm; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 1.4 to 1.8 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Bojo Soil

Position on landscape: North-, east-, and south-facing side slopes on mountains
Parent material: Kind—residuum; source—mixed metamorphic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, Sandberg bluegrass, rabbitbrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 3 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
3 to 10 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 15 to 35 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6
10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 5 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains

Distinctive present vegetation: Bottlebrush squirreltail, shadscale

Inclusion 2

Position on landscape: Scattered small peaks and ridges on mountains
Distinctive present vegetation: Barren

Inclusion 3

Position on landscape: Concave terraces adjacent to drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 4

Position on landscape: Slightly concave mountainsides
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Burrita soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Hoot soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Burrita soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Bojo soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Hoot—VIIs, nonirrigated; Burrita—VIIe, nonirrigated; Bojo—VIIs, nonirrigated
Range site: Hoot—024X002N; Burrita—024X005N; Bojo—024X026N

1071—Hoot-Wiskan-Atlow association

Map Unit Setting

Position on landscape: Mountain side slopes
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 100 days

Composition

Major components:

• Hoot very cobbly loam, 50 to 75 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—35 percent
• Wiskan very gravelly loam, 50 to 75 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—30 percent
• Atlow very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—20 percent

Contrasting inclusions:

• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Aridic Argixerolls very cobbly loam, 50 to 70 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Sumya very cobbly loam; 50 to 75 percent slopes—Lithic Xeric Torriorthents, clayey-skeletal, montmorillonitic, nonacid, frigid—3 percent
• Inclusion 4: Fluventic Haploxerolls loam, 0 to 4

percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, frigid—2 percent

Characteristics of the Hoot Soil

Position on landscape: South- and west-facing side slopes on mountains
Parent material: Kind—residuum; source—andesite and related volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 65 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
4 to 14 inches—extremely gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 6 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Wiskan Soil

Position on landscape: North- and east-facing side slopes on mountains
Parent material: Kind—residuum; source—siliceous volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, bluebunch wheatgrass, Thurber needlegrass, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—52

Typical profile

0 to 9 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
9 to 35 inches—very gravelly clay loam; 10 to 25 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
35 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.4 inches
Water-supplying capacity: About 8 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Atlow Soil

Position on landscape: South- and west-facing side slopes on mountains
Parent material: Kind—residuum; source—chert, shale, tuff, other volcanic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Black sagebrush, Indian ricegrass, Thurber needlegrass, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—62

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles

(by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-6

6 to 15 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6, A-7

15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.1 to 1.4 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Crests and north-facing side slopes of mountains
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave, north-facing side slopes on mountains
Distinctive present vegetation: Mountain big sagebrush
Inclusion 3
Position on landscape: North-facing side slopes on mountains
Distinctive present vegetation: Utah juniper
Inclusion 4
Position on landscape: Concave toe slopes adjacent to drainageways on mountains
Distinctive present vegetation: Basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Wiskan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Atlow soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Hoot soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Wiskan soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Atlow soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Hoot—VIIs, nonirrigated;

Wiskan—VIIs, nonirrigated; Atlow—VIIs, nonirrigated
Range site: Hoot—024X002N; Wiskan—024X031N; Atlow—024X030N

1073—Hoot, steep-Bojo-Hoot association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 46 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Hoot very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—50 percent
• Bojo very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—25 percent
• Hoot very cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents, 2 to 8 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—4 percent
• Inclusion 2: Cleaver very cobbly loam, 15 to 30 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—3 percent
• Inclusion 3: Typic Haplargids very cobbly loam, 15 to 30 percent slopes—Typic Haplargids, clayey-skeletal, montmorillonitic, mesic—3 percent

Characteristics of the Steep Hoot Soil

Position on landscape: South- and west-facing side slopes of foothills
Parent material: Kind—residuum; source—andesite, basalt, other volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 65 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
4 to 14 inches—extremely gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Bojo Soil

Position on landscape: North- and east-facing side slopes of foothills
Parent material: Kind—residuum; source—mixed metamorphic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, Sandberg bluegrass, rabbitbrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 3 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 40 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
3 to 10 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6
10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 5 to 14 inches

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.7 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Strongly Sloping Hoot Soil

Position on landscape: South- and west-facing side slopes of foothills
Parent material: Kind—residuum; source—andesite, rhyolite, quartzite, other volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 4 inches—very cobbly loam; 25 to 45 percent cobbles and stones and 35 to 65 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-4
4 to 14 inches—extremely gravelly clay loam; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); subangular blocky structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 0.8 inch to 1.2 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Terraces adjacent to drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 2
Position on landscape: Toe slopes
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 3
Position on landscape: Toe slopes
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the steep Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Bojo soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the strongly sloping Hoot soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the steep Hoot soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Bojo soil for selected uses and practices

Range seeding: Poor—droughty, small stones, too arid

Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the strongly sloping Hoot soil for selected uses and practices

Range seeding: Poor—too arid, rooting depth, droughty
Daily cover for landfill: Poor—small stones, depth to bedrock
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Hoot, steep—VIIs, nonirrigated; Bojo—VIIs, nonirrigated; Hoot, strongly sloping—VIIs, nonirrigated
Range site: Hoot, steep—024X002N; Bojo—024X026N; Hoot, strongly sloping—024X002N

1090—Bojo Variant-Schamp-Trunk association

Map Unit Setting

Position on landscape: Foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Composition

Major components:
• Bojo Variant very cobbly loam, 15 to 30 percent slopes—Typic Haplargids, clayey, montmorillonitic, mesic, shallow—35 percent
• Schamp loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—25 percent
• Trunk very cobbly loam, 4 to 15 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—25 percent

Contrasting inclusions:
• Inclusion 1: Rock outcrop—5 percent
• Inclusion 2: Xeric Torriorthents loam, 2 to 8 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Atlow very gravelly loam, 15 to 30 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, mesic—5 percent

Characteristics of the Bojo Variant Soil

Position on landscape: South-facing side slopes of foothills
Parent material: Kind—residuum; source—ash-flow tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, shadscale, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—45

Typical profile

0 to 5 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 55 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, CL-ML; estimated AASHTO classification—A-2, A-4
5 to 9 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
9 to 18 inches—clay; 0 to 20 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH; estimated AASHTO classification—A-7
18 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.1 to 2.5 inches
Water-supplying capacity: About 7 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Schamp Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—residuum; source—tuff, andesite, basalt
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass, scattered Utah juniper
Rock fragments on the surface: Kind—gravel; percentage of surface covered—20

Typical profile

0 to 6 inches—loam; 0 to 5 percent cobbles and stones and 5 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
6 to 34 inches—clay; 0 to 5 percent cobbles and stones and 0 to 20 percent pebbles (by weight); prismatic structure; hard, firm; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
34 to 60 inches—very cobbly loam; 25 to 60 percent cobbles and stones and 40 to 50 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, GM-GC, SC, SM-SC; estimated AASHTO classification—A-2, A-4, A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 5.7 to 7.0 inches
Water-supplying capacity: About 9 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Trunk Soil

Position on landscape: Crests of foothills
Parent material: Kind—residuum; source—chert, quartzite, shale
Slope features: Length—short; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—40

Typical profile

0 to 3 inches—very cobbly loam; 30 to 45 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, SM-SC, SC, GC; estimated AASHTO classification—A-4, A-6
3 to 30 inches—gravelly clay; 0 to 10 percent cobbles and stones and 40 to 50 percent pebbles (by weight); subangular blocky structure; very hard, firm; mildly alkaline (pH 7.7); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—CL, GC, CH; estimated AASHTO classification—A-7
30 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 22 to 38 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.9 to 3.8 inches
Water-supplying capacity: About 9 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The crests and upper side slopes of foothills
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave toe slopes along drainage channels
Distinctive present vegetation: Basin big sagebrush

Inclusion 3
Position on landscape: Concave, north- and east-facing side slopes of foothills
Distinctive present vegetation: Black sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bojo Variant soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Schamp soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Trunk soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Bojo Variant soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, hard to pack
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Schamp soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—shrink-swell, low strength, slope
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—slope, thin layer
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Slight

Ratings and restrictive features of the Trunk soil for selected uses and practices

Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bojo Variant—VIIe, nonirrigated; Schamp—VIIe, nonirrigated; Trunk—VIIs, nonirrigated
Range site: Bojo Variant—024X026N; Schamp—024X005N; Trunk—024X005N

1111—Yipor silt loam, sandy substratum

Map Unit Setting

Position on landscape: Stream terraces
Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Yipor silt loam, sandy substratum, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Wholan silt loam, rarely flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—8 percent
• Inclusion 2: Bluewing very gravelly loam, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Yobe silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—2 percent
• Inclusion 4: Xeric Torriorthents silt loam, 0 to 2 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—1 percent

Characteristics of the Yipor Soil

Position on landscape: Stream terraces
Parent material: Mixed silty alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bud sagebrush

Typical profile

0 to 4 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline

(4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—ML; estimated AASHTO classification—A-4

4 to 41 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—ML; estimated AASHTO classification—A-4

41 to 60 inches—stratified fine sand to loamy fine sand; massive; slightly hard, very friable; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: In the upper 41 inches—moderate; below that depth—rapid
Available water capacity: 7.1 to 8.6 inches
Water-supplying capacity: About 6 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth inset fans intersecting stream terraces
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Inclusion 2
Position on landscape: Slightly convex fan skirts adjacent to stream terraces
Distinctive present vegetation: Bailey greasewood

Inclusion 3
Position on landscape: The smooth lower part of stream terraces adjacent to channels
Distinctive present vegetation: Torrey quailbush

Inclusion 4
Position on landscape: The slightly concave lower part of stream terraces adjacent to channels
Distinctive present vegetation: Basin big sagebrush, basin wildrye

Major Uses

Current uses: Rangeland, wildlife habitat, irrigated cropland

Wildlife habitat elements

Suitability of the Yipor soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Yipor soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Fair—thin layer
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIc, irrigated, and VIIc, nonirrigated
Range site: 024X003N

1112—Yipor silt loam

Map Unit Setting

Position on landscape: Stream terraces
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Yipor silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Whirlo gravelly very fine sandy loam, 0 to 2 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—10 percent

Characteristics of the Yipor Soil

Position on landscape: Stream terraces
Parent material: Mixed silty alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, bottlebrush squirreltail

Typical profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 60 inches or more—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 9.7 to 11.5 inches
Water-supplying capacity: About 7 inches
Runoff: Ponded
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: The smooth lower part of fan skirts adjacent to stream terraces
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Yipor soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Yipor soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIIs, irrigated, and VIIs, nonirrigated
Range site: 024X003N

1113—Yipor-Badland association

Map Unit Setting

Position on landscape: Lake plains
Elevation: 3,800 to 4,300 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Yipor silt loam, warm, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—75 percent
• Badland—15 percent
Contrasting inclusions:
• Inclusion 1: Aeric Halaquepts silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Mazuma very fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent

Characteristics of the Yipor Soil

Position on landscape: Lake plain terraces
Parent material: Mixed silty alluvium influenced by volcanic ash
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, shadscale, bottlebrush squirreltail

Typical profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 60 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to

46); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare
Permeability: Moderate
Available water capacity: 9.7 to 11.5 inches
Water-supplying capacity: About 7 inches
Runoff: Ponded
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Badland

Position on landscape: Deeply dissected lake plain terraces
Slope features: Length—short; shape—concave to convex
Dominant present vegetation: Trace of black greasewood

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly concave lake plain terraces
Distinctive present vegetation: Basin wildrye
Inclusion 2
Position on landscape: Smooth lake plain terraces
Distinctive present vegetation: Bluegrass, shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Yipor soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Yipor soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess salt
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, excess salt
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Yipor—IIIs, irrigated, and VIIs, nonirrigated; Badland—VIIIe
Range site: Yipor—027X024N

1114—Yipor silt loam, occasionally flooded

Map Unit Setting

Position on landscape: Inset fans
Elevation: 3,800 to 4,300 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 100 days

Composition

Major component:
• Yipor silt loam, occasionally flooded, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Whirlo silt loam, 2 to 8 percent slopes—Typic Camborthids, loamy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Playas—3 percent

Characteristics of the Yipor Soil

Position on landscape: Inset fans
Parent material: Mixed silty alluvium influenced by loess
Slope features: Length—long; shape—smooth
Dominant present vegetation: Sickle saltbush, shadscale

Typical profile

0 to 8 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 36 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—ML; estimated AASHTO classification—A-4
36 to 60 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); slightly

sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—very brief; months—February through May
Permeability: Moderate
Available water capacity: 9.7 to 11.0 inches
Water-supplying capacity: About 7 inches
Runoff: Ponded
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth fan skirts at the mouth of inset fans
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Concave ponded areas
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Yipor soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Yipor soil for selected uses and practices

Range seeding: Poor—too arid, excess sodium, excess salt
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Fair—thin layer, excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, excess salt
Drainage: Deep to water
Irrigation: Erodes easily, flooding
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: IIw, irrigated, and VIIw, nonirrigated
Range site: 024X012N

1121—Genegraf-Chilper-Bluewing association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 3,500 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Genegraf very gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—45 percent
• Chilper gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—25 percent
• Bluewing very gravelly loam, 0 to 2 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents cobbly loam, 15 to 30 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Torriorthents gravelly loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—3 percent
• Inclusion 3: Bluewing extremely stony loam, frequently flooded, 0 to 2 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—2 percent

Characteristics of the Genegraf Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—67

Typical profile

0 to 6 inches—very gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 55 to 75

percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

6 to 24 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—SC; estimated AASHTO classification—A-6

24 to 60 inches or more—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 40 to 65 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SM, GM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 4.6 to 6.4 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Chilper Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—32

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 5 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-4

3 to 13 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

13 to 29 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7

29 to 60 inches—extremely gravelly sandy loam; 0 to 10 percent cobbles and stones and 75 to 90 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GP, GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 5.1 to 6.6 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bluewing Soil

Position on landscape: Inset fans
Parent material: Alluvium derived from mixed rock sources
Slope features: Length—long; shape—smooth
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—42

Typical profile

0 to 13 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A1, A-2

13 to 60 inches or more—stratified very gravelly sand to

extremely gravelly loamy coarse sand; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.15; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Back slopes of fan piedmont remnants
Distinctive present vegetation: Bluegrass, shadscale
Inclusion 2
Position on landscape: Concave fan skirts adjacent to the lower part of fan piedmonts
Distinctive present vegetation: Black greasewood
Inclusion 3
Position on landscape: Terraces adjacent to narrow drainageways on inset fans
Distinctive present vegetation: Rubber rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Genegraf soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Chilper soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—poor
Suitability of the Bluewing soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Genegraf soil for selected uses and practices

Range seeding: Poor—too arid, small stones, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium

Ratings and restrictive features of the Chilper soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, small stones
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Good
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium
Drainage: Deep to water
Irrigation: Percs slowly, slope, erodes easily
Terraces and diversions: Erodes easily

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, small stones, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty
Terraces and diversions: Large stones, too sandy

Interpretive Groups

Capability classification: Genegraf—VIIs, nonirrigated; Chilper—IVe, irrigated, and VIIs, nonirrigated; Bluewing—IVs, irrigated, and VIIs, nonirrigated
Range site: Genegraf—027X030N; Chilper—027X028N; Bluewing—027X030N

1122—Genegraf-Trocken-Bluewing association

Map Unit Setting

Position on landscape: Fan piedmonts, fan skirts
Elevation: 3,800 to 4,500 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Genegraf very gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—35 percent
• Trocken very gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—30 percent
• Bluewing very gravelly loamy sand, frequently flooded, 0 to 2 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents stony loam, 8 to 15 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—7 percent
• Inclusion 2: Bluewing stony loamy sand, frequently flooded, 4 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Trocken extremely stony loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—4 percent

Characteristics of the Genegraf Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—67

Typical profile

0 to 6 inches—very gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 55 to 75 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
6 to 24 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.8); moderately saline (8 to 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—SC; estimated AASHTO classification—A-6
24 to 60 inches or more—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 40 to 65 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SM, GM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 4.6 to 6.4 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Trocken Soil

Position on landscape: Dissected fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 3 inches—very gravelly very fine sandy loam; 0 to 25 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles

(by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 4 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bluewing Soil

Position on landscape: Inset fans
Parent material: Mixed alluvium
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Spiny hopsage, rubber rabbitbrush, littleleaf horsebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—42

Typical profile

0 to 5 inches—very gravelly loamy sand; 10 to 25 percent cobbles and stones and 55 to 65 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP-SM; estimated AASHTO classification—A-1

5 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 0 to 25 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—November through September
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 5 inches
Runoff: Slow
Hydrologic group: A
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The plane to concave lower part of fan skirts
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 2
Position on landscape: Slightly concave inset fans and drainageways
Distinctive present vegetation: Shadscale, Bailey greasewood
Inclusion 3
Position on landscape: Concave inset fans
Distinctive present vegetation: Shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Genegraf soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Bluewing soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Genegraf soil for selected uses and practices

Range seeding: Poor—too arid, small stones, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, small stones
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Genegraf—VIIs, nonirrigated; Trocken—VIIs, nonirrigated; Bluewing—VIIw, nonirrigated
Range site: Genegraf—027X030N; Trocken—027X028N; Bluewing—027X022N

1130—Cleaver-Trocken-Bluewing association

Map Unit Setting

Position on landscape: Fan piedmonts, fan skirts
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Cleaver gravelly loam, 2 to 4 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—55 percent
• Trocken gravelly very fine sandy loam, 4 to 15 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—15 percent
• Bluewing very gravelly loamy sand, frequently flooded, 2 to 4 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Genegraf gravelly sandy loam, 4 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—6 percent
• Inclusion 2: Typic Nadurargids gravelly loam, 4 to 8 percent slopes—Typic Nadurargids, fine, montmorillonitic, mesic—6 percent
• Inclusion 3: Typic Natrargids gravelly loam, 4 to 8 percent slopes—Typic Natrargids, fine, montmorillonitic, mesic—3 percent

Characteristics of the Cleaver Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium derived from basic igneous rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—17

Typical profile

0 to 5 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, SM-SC, ML, CL-ML; estimated AASHTO classification—A-4
5 to 17 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, CL; estimated AASHTO classification—A-6, A-7
17 to 24 inches—indurated duripan; extremely hard, extremely firm
24 to 60 inches—extremely gravelly coarse sandy loam; 10 to 25 percent cobbles and stones and 75 to 90 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 9.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—slow; below the hardpan—moderately rapid

Available water capacity: 1.9 to 2.6 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Trocken Soil

Position on landscape: Dissected fan skirts
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4
3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 5 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Bluewing Soil

Position on landscape: Inset fans
Parent material: Alluvium derived from mixed rock sources
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Spiny hopsage, rubber rabbitbrush, littleleaf horsebrush, Bailey greasewood
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—42

Typical profile

0 to 13 inches—very gravelly loamy sand; 10 to 25 percent cobbles and stones and 55 to 65 percent pebbles (by weight); single grain; loose; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP-SM; estimated AASHTO classification—A-1
13 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 0 to 25 percent cobbles and stones and 65 to 80 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM, GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—frequent; duration—very brief; months—November through September
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 5 inches
Runoff: Slow
Hydrologic group: A
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan aprons
Distinctive present vegetation: Greasewood, bud sagebrush
Inclusion 2
Position on landscape: The convex upper part of erosional fan piedmont remnants
Distinctive present vegetation: Shadsale, bud sagebrush
Inclusion 3
Position on landscape: The convex upper part of fan piedmont remnants
Distinctive present vegetation: Shadsale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Cleaver soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Bluewing soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Cleaver soil for selected uses and practices

Range seeding: Poor—too arid, droughty
Daily cover for landfill: Poor—cemented pan, small stones, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—cemented pan
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope, large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—flooding
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Cleaver—VIIs, nonirrigated; Trocken—VIIs, nonirrigated; Bluewing—VIIw, nonirrigated
Range site: Cleaver—027X028N; Trocken—027X028N; Bluewing—027X022N

1140—Layview, very steep-Tusel-Layview association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,000 to 9,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 70 days

Composition

Major components:
• Layview very gravelly loam, 50 to 75 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—35 percent
• Tusel very cobbly loam, 50 to 75 percent slopes—Argic Pachic Cryoborolls, loamy-skeletal, mixed—30 percent
• Layview very gravelly loam, 4 to 15 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—20 percent
Contrasting inclusions:
• Inclusion 1: Iver gravelly silt loam, 50 to 75 percent slopes—Pachic Haploxerolls, coarse-loamy, mixed, frigid—5 percent
• Inclusion 2: Spinlin very gravelly loam, 30 to 50 percent slopes—Argic Cryoborolls, clayey-skeletal, montmorillonitic—4 percent
• Inclusion 3: Rock outcrop and rubble land—4 percent
• Inclusion 4: Pachic Cryoborolls silt loam, 30 to 50 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—2 percent

Characteristics of the Very Steep Layview Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, rhyolite, tuff, other volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, bluebunch wheatgrass, Idaho fescue

Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—80

Typical profile

0 to 7 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

7 to 14 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 45 to 70 percent pebbles (by weight); massive; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6

14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.4 inches
Water-supplying capacity: About 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Tusel Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, shale, quartzite, other volcanic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, mountain brome, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—40

Typical profile

0 to 19 inches—very cobbly loam; 45 to 65 percent cobbles and stones and 25 to 55 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, SM, GM-GC, SM-SC; estimated AASHTO classification—A-2, A-4

19 to 42 inches—very gravelly clay loam; 15 to 45 percent cobbles and stones and 60 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GC; estimated AASHTO classification—A-2

42 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 4.9 inches
Water-supplying capacity: About 12 inches
Runoff: Very rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—3; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Strongly Sloping Layview Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—andesite, rhyolite, tuff, other volcanic rocks
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, Idaho fescue, black sagebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—80

Typical profile

0 to 7 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2

7 to 14 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 45 to 70 percent pebbles (by weight); massive; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified

classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.4 inches
Water-supplying capacity: About 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, south- and west-facing side slopes of mountains
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 2
Position on landscape: The convex lower part of south- and west-facing side slopes on mountains
Distinctive present vegetation: Idaho fescue, low sagebrush
Inclusion 3
Position on landscape: The crests and upper side slopes of mountains
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Concave, north- and east-facing side slopes of mountains
Distinctive present vegetation: Letterman needlegrass, tailcup lupine

Major Uses

Current uses: Wildlife habitat, rangeland

Wildlife habitat elements

Suitability of the very steep Layview soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the sloping Tusel soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the strongly sloping Layview soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the very steep Layview soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Tusel soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—slope, small stones
Shallow excavations: Severe—slope, large stones
Local roads and streets: Severe—slope, large stones
Roadfill: Poor—slope, large stones
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the strongly sloping Layview soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Layview, very steep—VIIs, nonirrigated; Tusel—VIIs, nonirrigated; Layview, strongly sloping—VIIs, nonirrigated
Range site: Layview, very steep—024X027N; Tusel—024X032N; Layview, strongly sloping—024X016N

1160—Slaw-Ragtown association

Map Unit Setting

Position on landscape: Lake plains
Elevation: 3,600 to 3,800 feet

Average annual precipitation: About 5 inches
Average annual air temperature: About 52 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Slaw silt loam, 0 to 2 percent slopes—Typic Torrifluvents, fine-silty, mixed (calcareous), mesic—65 percent
• Ragtown fine sandy loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Aeric Halaquepts silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Aeric Halaquepts silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—5 percent

Characteristics of the Slaw Soil

Position on landscape: The upper part of lake plains
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, Torrey quailbush, shadscale, inland saltgrass

Typical profile

0 to 3 inches—silt loam; platy structure; soft, friable; strongly alkaline (pH 9.0); moderately saline (8 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
3 to 60 inches—stratified very fine sandy loam to silty clay; massive; hard, friable; very strongly alkaline (pH 9.2); strongly saline (more than 16 mmhos/cm); nonsodic (SAR more than 46); estimated Unified classification—ML, CL; estimated AASHTO classification—A-6, A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Frequency—occasional; duration—very brief; months—December through May
Permeability: Slow
Available water capacity: 11.4 to 12.6 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Ragtown Soil

Position on landscape: Lake plain terraces
Parent material: Lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical profile

0 to 7 inches—fine sandy loam; 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
7 to 20 inches—silty clay loam; massive; slightly hard, friable; very strongly alkaline (pH 9.2); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
20 to 60 inches—stratified silty clay loam to clay; massive; slightly hard, friable; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—CL, CH, MH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 9.5 to 11.1 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: C
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth lake plain terraces
Distinctive present vegetation: Inland saltgrass, black greasewood
Inclusion 2
Position on landscape: Smooth lake plain terraces
Distinctive present vegetation: Basin wildrye, Torrey quailbush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Slaw soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the Ragtown soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Slaw soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Moderate—flooding
Local roads and streets: Severe—low strength, flooding
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Percs slowly, erodes easily
Terraces and diversions: Erodes easily, percs slowly

Ratings and restrictive features of the Ragtown soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—too clayey
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium, hard to pack

Interpretive Groups

Capability classification: Slaw—IIIw, irrigated, and VIIs, nonirrigated; Ragtown—VIIs, nonirrigated
Range site: Slaw—027X041N; Ragtown—027X025N

1200—Bluewing, moderately steep-Bluewing-Daick association

Map Unit Setting

Position on landscape: Fan piedmonts, hills
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Bluewing very gravelly sandy loam, 15 to 30 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—40 percent
• Bluewing very gravelly sandy loam, 4 to 15 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—25 percent
• Daick gravelly clay, 30 to 50 percent slopes—Typic Torriorthents, clayey, montmorillonitic (calcareous), mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Bluewing very gravelly silt loam, rarely flooded, 0 to 2 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—7 percent
• Inclusion 2: Rock outcrop—6 percent
• Inclusion 3: Xeric Torriorthents cobbly sandy loam, 0 to 2 percent slopes—Xeric Torriorthents, sandy-skeletal, mixed, mesic—1 percent
• Inclusion 4: Typic Torriorthents silt loam, 2 to 8 percent slopes—Typic Torriorthents, fine-loamy, mixed (calcareous), mesic—1 percent

Characteristics of the Moderately Steep Bluewing Soil

Position on landscape: Fan piedmont remnants
Parent material: Sandy alluvium derived from mixed rock sources
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, Indian ricegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—42

Typical profile

0 to 5 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

5 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 5 inches
Runoff: Rapid
Hydrologic group: A
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Strongly Sloping Bluewing Soil

Position on landscape: Remnants of inset fans
Parent material: Sandy alluvium derived from mixed rock sources
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, Indian ricegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—42

Typical profile

0 to 5 inches—very gravelly sandy loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1
5 to 60 inches—stratified very gravelly sand to extremely gravelly loamy coarse sand; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 5 inches
Runoff: Rapid
Hydrologic group: A
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Daick Soil

Position on landscape: Side slopes of hills
Parent material: Kind—residuum; source—tuffaceous rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—27

Typical profile

0 to 4 inches—gravelly clay; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH, CL, GC; estimated AASHTO classification—A-7
4 inches—weathered bedrock

Soil and water features

Depth to bedrock: 4 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 0.5 to 0.6 inch
Water-supplying capacity: About 4 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The concave central parts of inset fans
Distinctive present vegetation: Shadscale, Bailey greasewood
Inclusion 2
Position on landscape: Hillsides, hilltops
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Concave inset fans adjacent to drainageways
Distinctive present vegetation: Wyoming big sagebrush
Inclusion 4
Position on landscape: Outer margins of inset fans adjacent to foot slopes of fan piedmont remnants
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the moderately steep Bluewing soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the strongly sloping Bluewing soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Daick soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the moderately steep Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, small stones, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the strongly sloping Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, small stones, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Slope, large stones, too sandy

Ratings and restrictive features of the Daick soil for selected uses and practices

Range seeding: Poor—too arid, droughty, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, too clayey, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bluewing, moderately steep—VIIs, nonirrigated; Bluewing, strongly sloping—IVs, irrigated, and VIIs, nonirrigated; Daick—VIIs, nonirrigated
Range site: Bluewing, moderately steep—027X018N; Bluewing, strongly sloping—027X018N; Daick—027X027N

1201—Bluewing gravelly sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 3,500 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 52 degrees F
Frost-free period: About 120 days

Composition

Major component:
• Bluewing gravelly sandy loam, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—90 percent

Contrasting inclusions:
• Inclusion 1: Mazuma fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Swingler silt loam, clayey substratum, strongly saline-sodic, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent

Characteristics of the Bluewing Soil

Position on landscape: Inset fans
Parent material: Sandy alluvium derived from mixed rock sources
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—30

Typical profile

0 to 5 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2
5 to 60 inches—stratified gravelly sand to extremely gravelly loamy coarse sand; 5 to 25 percent cobbles and stones and 65 to 75 percent pebbles (by weight); massive; loose; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 1.9 to 3.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: A
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan skirts adjacent to fan piedmonts
Distinctive present vegetation: Bluegrass, shadscale
Inclusion 2
Position on landscape: Smooth remnants of lake plain terraces adjacent to the lower part of fan piedmonts
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bluewing soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Bluewing soil for selected uses and practices

Range seeding: Poor—too arid, small stones, droughty
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage
Drainage: Deep to water
Irrigation: Droughty, slope
Terraces and diversions: Slope, large stones, too sandy

Interpretive Groups

Capability classification: IVs, irrigated, and VIIs, nonirrigated
Range site: 027X018N

1210—Daick-Rezave-Rubble land association

Map Unit Setting

Position on landscape: Foothills
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Daick gravelly clay loam, 30 to 50 percent slopes—Typic Torriorthents, clayey, montmorillonitic (calcareous), mesic, shallow—35 percent
• Rezave extremely stony very fine sandy loam, 30 to

50 percent slopes—Lithic Natrargids, clayey, montmorillonitic, mesic—25 percent
• Rubble land—25 percent
Contrasting inclusions:
• Inclusion 1: Typic Natrargids very cobbly loam, 4 to 15 percent slopes—Typic Natrargids, fine, montmorillonitic, mesic—8 percent
• Inclusion 2: Typic Natrargids very cobbly loam, 30 to 50 percent slopes—Typic Natrargids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Typic Torriorthents gravelly sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent

Characteristics of the Daick Soil

Position on landscape: Side slopes of foothills
Parent material: Kind—residuum; source—tuffaceous rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, Bailey greasewood, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—27

Typical profile

0 to 4 inches—gravelly clay; 0 to 5 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, GC; estimated AASHTO classification—A-7
4 inches—weathered bedrock

Soil and water features

Depth to bedrock: 4 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 0.5 to 0.6 inch
Water-supplying capacity: About 4 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rezave Soil

Position on landscape: The shoulder slopes and upper side slopes of foothills
Parent material: Kind—residuum; source—tuffaceous rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, rabbitbrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 3 inches—extremely stony very fine sandy loam; 35 to 45 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
3 to 14 inches—stony clay; 5 to 30 percent cobbles and stones and 0 to 10 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL, CH; estimated AASHTO classification—A-7
14 to 16 inches—stony clay loam; 5 to 10 percent cobbles and stones and 30 to 50 percent pebbles (by weight); massive; hard, firm; very strongly alkaline (pH 9.2); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SC, CL; estimated AASHTO classification—A-7
16 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 1.7 to 2.1 inches
Water-supplying capacity: About 5 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rubble Land

Position on landscape: Crests, shoulder slopes, and back slopes of foothills
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of foothills
Distinctive present vegetation: Bluegrass, shadscale
Inclusion 2
Position on landscape: Concave side slopes of foothills
Distinctive present vegetation: Bluegrass, shadscale
Inclusion 3
Position on landscape: Concave toe slopes adjacent to drainageways
Distinctive present vegetation: Indian ricegrass, Bailey greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Daick soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Rezave soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Daick soil for selected uses and practices

Range seeding: Poor—too arid, droughty, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Rezave soil for selected uses and practices

Range seeding: Poor—too arid, droughty, excess sodium
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, large stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—excess sodium

Interpretive Groups

Capability classification: Daick—VIIs, nonirrigated; Rezave—VIIs, nonirrigated; Rubble land—VIIIs
Range site: Daick—027X027N; Rezave—027X030N

1230—Knott-Sodhouse-Wholan association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Knott gravelly very fine sandy loam, 8 to 15 percent slopes—Typic Nadurargids, clayey, montmorillonitic, mesic, shallow—45 percent
• Sodhouse gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—25 percent
• Wholan silt loam, rarely flooded, 0 to 2 percent slopes—Typic Camborthids, coarse-silty, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Cortez gravelly very fine sandy loam, 2 to 8 percent slopes—Xerollic Nadurargids, fine, montmorillonitic, mesic—10 percent
• Inclusion 2: Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—5 percent

Characteristics of the Knott Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium and loess high in content of volcanic ash
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—26

Typical profile

0 to 4 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
4 to 18 inches—clay; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); prismatic

structure; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7

18 to 34 inches—indurated layer; massive; extremely hard, extremely firm

34 to 60 inches—very gravelly coarse sandy loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow; below the duripan—moderately rapid
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Sodhouse Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium, loess, and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—8

Typical profile

0 to 2 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 7.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

2 to 14 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

14 to 29 inches—indurated layer; massive; extremely hard, extremely firm

29 to 60 inches—extremely gravelly sandy loam; 5 to 20 percent cobbles and stones and 70 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate; below the duripan—moderately rapid
Available water capacity: 1.5 to 2.2 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Wholan Soil

Position on landscape: Fan skirts
Parent material: Loess over silty alluvium derived from mixed rock sources
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush

Typical profile

0 to 5 inches—silt loam; platy structure; slightly hard, very friable; moderately alkaline (pH 7.9); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

5 to 60 inches—silt loam; massive; slightly hard, very friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: Rare

Permeability: Moderate
Available water capacity: 9.7 to 10.9 inches
Water-supplying capacity: About 7 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Summits of fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, Thurber needlegrass
Inclusion 2
Position on landscape: Summits of fan piedmont remnants
Distinctive present vegetation: Shadscale, bottlebrush squirreltail

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Knott soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Sodhouse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Wholan soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Knott soil for selected uses and practices

Range seeding: Poor—too arid, droughty, excess salt
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan, low strength
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Sodhouse soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Wholan soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, too crusty
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—flooding
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Erodes easily
Terraces and diversions: Erodes easily

Interpretive Groups

Capability classification: Knott—VIIs, nonirrigated; Sodhouse—VIIs, nonirrigated; Wholan—IIc, irrigated, and VIIc, nonirrigated
Range site: Knott—024X002N; Sodhouse—024X002N; Wholan—024X002N

1231—Knott-Sodhouse-Cortez association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 5,000 to 5,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Knott gravelly very fine sandy loam, 8 to 15 percent

slopes—Typic Nadurargids, clayey, montmorillonitic, mesic, shallow—45 percent
• Sodhouse gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—20 percent
• Cortez gravelly very fine sandy loam, 2 to 8 percent slopes—Xerollic Nadurargids, fine, montmorillonitic, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents cobbly loam, rarely flooded, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xeric Torriorthents loam, 2 to 8 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Typic Torriorthents gravelly very fine sandy loam, 15 to 30 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent

Characteristics of the Knott Soil

Position on landscape: Side slopes of fan piedmont remnants
Parent material: Mixed alluvium and loess high in content of volcanic ash
Slope features: Length—long; shape—concave
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—26

Typical profile

0 to 4 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
4 to 18 inches—clay; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7
18 to 34 inches—indurated layer; massive; extremely hard, extremely firm
34 to 60 inches—very gravelly coarse sandy loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow; below the duripan—moderately rapid
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Sodhouse Soil

Position on landscape: Summits of the mid and lower fan piedmont remnants
Parent material: Mixed alluvium and loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—8

Typical profile

0 to 2 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 35 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 7.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
2 to 14 inches—very fine sandy loam; 0 to 25 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4
14 to 29 inches—indurated layer; massive; extremely hard, extremely firm
29 to 60 inches—extremely gravelly sandy loam; 5 to 20 percent cobbles and stones and 70 to 85 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.6); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderate; below the duripan—moderately rapid
Available water capacity: 1.5 to 2.2 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Moderate

Characteristics of the Cortez Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—22

Typical profile

0 to 8 inches—gravelly very fine sandy loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4
8 to 33 inches—clay; 15 to 25 percent pebbles (by weight); prismatic structure; hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—CH; estimated AASHTO classification—A-7
33 to 46 inches—indurated layer; massive; extremely hard, extremely firm
46 to 60 inches—very cobbly coarse sandy loam; 15 to 50 percent cobbles and stones and 40 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.5); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 22 to 36 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—very slow; below the duripan—rapid
Available water capacity: 4.7 to 5.7 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave inset fans
Distinctive present vegetation: Bottlebrush squirreltail, Wyoming big sagebrush
Inclusion 2
Position on landscape: Concave inset fans
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 3
Position on landscape: Plane and slightly concave side slopes of fan piedmont remnants
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Knott soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Sodhouse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Cortez soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Knott soil for selected uses and practices

Range seeding: Poor—too arid, droughty, excess salt
Daily cover for landfill: Poor—cemented pan, small stones

Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan, low strength
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Sodhouse soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Cortez soil for selected uses and practices

Range seeding: Poor—excess sodium, too crusty
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—hard to pack, excess salt
Drainage: Deep to water
Irrigation: Percs slowly, cemented pan, slope
Terraces and diversions: Large stones, cemented pan

Interpretive Groups

Capability classification: Knott—VIIs, nonirrigated; Sodhouse—VIIs, nonirrigated; Cortez—IVe, irrigated, and VIs, nonirrigated
Range site: Knott—024X002N; Sodhouse—024X002N; Cortez—024X005N

1232—Knott, moderately steep-Snapp-Knott association

Map Unit Setting

Position on landscape: Ballenas
Elevation: 4,500 to 5,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Knott cobbly very fine sandy loam, 15 to 30 percent slopes—Typic Nadurargids, clayey, montmorillonitic, mesic, shallow—50 percent
• Snapp cobbly very fine sandy loam, 15 to 30 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—20 percent
• Knott cobbly very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, clayey, montmorillonitic, mesic, shallow—15 percent
Contrasting inclusions:
• Inclusion 1: Cortez cobbly very fine sandy loam, 2 to 8 percent slopes—Xerollic Nadurargids, fine, montmorillonitic, mesic—8 percent
• Inclusion 2: Sodhouse cobbly very fine sandy loam, 4 to 15 percent slopes—Typic Durorthids, loamy, mixed, mesic, shallow—5 percent
• Inclusion 3: Trocken Variant cobbly loam, rarely flooded, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—2 percent

Characteristics of the Moderately Steep Knott Soil

Position on landscape: South-facing side slopes of partial ballenas
Parent material: Mixed alluvium and loess high in content of volcanic ash
Slope features: Length—long; shape—plane
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—26

Typical profile

0 to 4 inches—cobbly very fine sandy loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4
4 to 18 inches—clay; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6);

slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7

18 to 34 inches—indurated layer; massive; extremely hard, extremely firm

34 to 60 inches—very gravelly coarse sandy loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow; below the duripan—moderately rapid
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Snapp Soil

Position on landscape: North-facing side slopes of partial ballenas
Parent material: Mixed alluvium
Slope features: Length—long; shape—plane
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 9 inches—cobbly very fine sandy loam; 30 to 40 percent cobbles and stones and 15 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4

9 to 28 inches—gravelly clay; 25 to 50 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.6); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, GC; estimated AASHTO classification—A-7

28 to 39 inches—gravelly clay loam; 25 to 50 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL GC; estimated AASHTO classification—A-6, A-7

39 to 60 inches or more—very gravelly loamy sand; 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 5.6 to 7.4 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Moderately Sloping Knott Soil

Position on landscape: Crests of ballenas
Parent material: Mixed alluvium and loess high in content of volcanic ash
Slope features: Length—short; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—26

Typical profile

0 to 4 inches—cobbly very fine sandy loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

4 to 18 inches—clay; 0 to 5 percent cobbles and stones and 10 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.6); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7

18 to 34 inches—indurated layer; massive; extremely hard, extremely firm
34 to 60 inches—very gravelly coarse sandy loam; 5 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—slow; below the duripan—moderately rapid
Available water capacity: 2.4 to 3.0 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex relict summit areas at the upper ends of ballenas
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex crests and shoulder slopes of ballenas
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 3
Position on landscape: Channels between ballenas
Distinctive present vegetation: Thurber needlegrass, spiny hopsage, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the moderately steep Knott soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Snapp soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the moderately sloping Knott soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the moderately steep Knott soil for selected uses and practices

Range seeding: Poor—too arid, droughty, excess salt
Daily cover for landfill: Poor—cemented pan, small stones, slope
Shallow excavations: Severe—cemented pan, cutbanks cave, slope
Local roads and streets: Severe—cemented pan, low strength, slope
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, slope
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Snapp soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—seepage, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, excess sodium

Ratings and restrictive features of the moderately sloping Knott soil for selected uses and practices

Range seeding: Poor—too arid, droughty, excess salt
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan, low strength
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—seepage

Interpretive Groups

Capability classification: Knott, moderately steep—VIIe, nonirrigated; Snapp—VIIs, nonirrigated; Knott, moderately sloping—VIIs, nonirrigated
Range site: Knott, moderately steep—024X002N; Snapp—024X005N; Knott, moderately sloping—024X002N

1270—Gol-Say association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 7,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 90 days

Composition

Major components:
• Gol very cobbly sandy loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid, shallow—45 percent
• Say stony loam, 30 to 50 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—40 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls stony loam, 8 to 15 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Lithic Xerollic Haplargids very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—3 percent
• Inclusion 4: Lithic Xeric Torriorthents very cobbly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy, mixed, mesic—2 percent

Characteristics of the Gol Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, bluebunch wheatgrass, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 7 inches—very cobbly sandy loam; 55 to 65 percent cobbles and stones and 15 to 30 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2
7 to 18 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
18 inches—weathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.9 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Say Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, snowberry, bluebunch wheatgrass, Idaho fescue, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—18

Typical profile

0 to 9 inches—stony loam; 5 to 15 percent cobbles and stones and 5 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
9 to 19 inches—cobbly loam; 5 to 30 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-2, A-6

19 to 25 inches—gravelly coarse sandy loam; 0 to 15 percent cobbles and stones and 30 to 50 percent pebbles (by weight); massive; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-1
25 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.6 to 3.3 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The convex lower side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, basin big sagebrush
Inclusion 2
Position on landscape: Concave crests of mountains
Distinctive present vegetation: Black sagebrush, low sagebrush
Inclusion 3
Position on landscape: Scattered small peaks and ridges on mountains
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Back slopes of mountains
Distinctive present vegetation: Utah juniper
Other minor inclusions
• On concave toe slopes adjacent to drainageways, areas that support quaking aspen

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Gol soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Say soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Gol soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Say soil for selected uses and practices

Range seeding: Poor—large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Gol—VIIs, nonirrigated; Say—VIIe, nonirrigated
Range site: Gol—024X028N; Say—024X021N

1271—Gol-Say-Rock outcrop association, steep

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,400 to 6,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 90 days

Composition

Major components:
• Gol very bouldery sandy loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid, shallow—30 percent
• Say very bouldery loam, 30 to 50 percent slopes—

Aridic Argixerolls, fine-loamy, mixed, frigid—30 percent
• Rock outcrop—25 percent
Contrasting inclusions:
• Inclusion 1: Aridic Haploxerolls very bouldery sandy loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Lithic Xeric Torriorthents very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Fluvaquentic Haplaquolls loam, 0 to 4 percent slopes—Fluvaquentic Haplaquolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Gol Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, mountain big sagebrush, bluebunch wheatgrass, scattered Utah Juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones, boulders; percentage of surface covered—50

Typical profile

0 to 7 inches—very bouldery sandy loam; 40 to 50 percent cobbles and stones and 30 to 40 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
7 to 18 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2
18 inches—weathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.9 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Say Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, snowberry, bluebunch wheatgrass, Idaho fescue, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones, boulders; percentage of surface covered—35

Typical profile

0 to 9 inches—very bouldery loam; 10 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
9 to 19 inches—cobbly loam; 5 to 30 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-2, A-6
19 to 25 inches—gravelly coarse sandy loam; 0 to 15 percent cobbles and stones and 30 to 50 percent pebbles (by weight); massive; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-1
25 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.6 to 3.3 inches
Water-supplying capacity: About 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate

Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Crests and side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Oceanspray, serviceberry
Inclusion 2
Position on landscape: Eroded side slopes of mountains
Distinctive present vegetation: Singleleaf pinyon, Utah juniper, mountain big sagebrush
Inclusion 3
Position on landscape: Drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Gol soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Say soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Gol soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Say soil for selected uses and practices

Range seeding: Poor—large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Gol—VIIs, nonirrigated; Say—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Gol—024X028N; Say—024X021N

1272—Gol-Say-Rock outcrop association, very steep

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 6,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 100 days

Composition

Major components:
• Gol very bouldery sandy loam, warm, 50 to 75 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid, shallow—35 percent
• Say very bouldery loam, 50 to 75 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—25 percent
• Rock outcrop—25 percent
Contrasting inclusions:
• Inclusion 1: Lithic Xeric Torriorthents very cobbly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed, frigid—8 percent
• Inclusion 2: Xerollic Haplargids very bouldery loam, 30 to 50 percent slopes—Xerollic Haplargids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Cumulic Haplaquolls stony loam, 2 to 8 percent slopes—Cumulic Haplaquolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Gol Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Desert needlegrass, Nevada ephedra, spiny hopsage, Indian ricegrass, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones, boulders; percentage of surface covered—50

Typical profile

0 to 7 inches—very bouldery sandy loam; 40 to 50 percent cobbles and stones and 30 to 40 percent pebbles (by weight); platy structure; soft, friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2

7 to 18 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 60 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2

18 inches—weathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.3 to 1.9 inches
Water-supplying capacity: About 10 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Say Soil

Position on landscape: North- and east-facing mountainsides
Parent material: Kind—residuum; source—granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, snowberry, bluebunch wheatgrass, Idaho fescue, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones, boulders; percentage of surface covered—35

Typical profile

0 to 9 inches—very bouldery loam; 10 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4

9 to 19 inches—cobbly loam; 5 to 30 percent cobbles and stones and 25 to 50 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-2, A-6

19 to 25 inches—gravelly coarse sandy loam; 0 to 15 percent cobbles and stones and 30 to 50 percent pebbles (by weight); massive; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-1

25 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.6 to 3.3 inches
Water-supplying capacity: About 12 inches
Runoff: Very rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Utah juniper, Wyoming big sagebrush

Inclusion 2
Position on landscape: Convex toe slopes of mountains
Distinctive present vegetation: Desert needlegrass, shadscale

Inclusion 3
Position on landscape: Concave toe slopes adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the GoI soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Say soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the GoI soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Say soil for selected uses and practices

Range seeding: Poor—large stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: GoI—VIIs, nonirrigated; Say—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: GoI—027X017N; Say—027X058N

1280—Gwena-Enko-Frewa association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Gwena very fine sandy loam, 4 to 15 percent slopes—Xerollic Nadurargids, loamy, mixed, mesic, shallow—35 percent
• Enko fine sandy loam, 2 to 8 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—30 percent
• Frewa loamy fine sand, 2 to 8 percent slopes—Durorthidic Xeric Torripsamments, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Snapp very fine sandy loam, 4 to 15 percent slopes—Durixerollic Natrargids, clayey over sandy or sandy-skeletal, montmorillonitic, mesic—8 percent
• Inclusion 2: McConnel fine sandy loam, 2 to 8 percent slopes—Xerollic Camborthids, sandy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Enko fine sandy loam, 15 to 30 percent slopes—Durixerollic Camborthids, coarse-loamy, mixed, mesic—2 percent

Characteristics of the Gwena Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium somewhat influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Sandberg bluegrass, Wyoming big sagebrush, spiny hopsage

Typical profile

0 to 9 inches—very fine sandy loam; 0 to 5 percent cobbles and stones and 0 to 20 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
9 to 19 inches—clay loam; 0 to 10 percent cobbles and stones and 0 to 25 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 8.9); nonsaline (2 to 4 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
19 inches—indurated layer; massive; extremely hard, extremely firm

Soil and water features

Depth to a hardpan: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches

Flooding: None
Permeability: Very slow
Available water capacity: 2.6 to 2.9 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.49; T value—1; wind erodibility group—3
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Enko Soil

Position on landscape: Fan skirts
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Sandberg bluegrass, Wyoming big sagebrush, spiny hopsage

Typical profile

0 to 6 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC; estimated AASHTO classification—A-4
6 to 29 inches—fine sandy loam; 0 to 15 percent pebbles (by weight); weak fine subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline or slightly saline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
29 to 60 inches—sandy loam; 0 to 25 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: In the upper 29 inches—moderately rapid; below that depth—slow
Available water capacity: 6.5 to 8.8 inches
Water-supplying capacity: About 8 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Frewa Soil

Position on landscape: Fan skirts
Parent material: Alluvium derived from mixed rock sources and influenced by volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Thurber needlegrass, bottlebrush squirreltail, Sandberg bluegrass, Wyoming big sagebrush, spiny hopsage
Rock fragments on the surface: Kind—gravel; percentage of surface covered—1

Typical profile

0 to 8 inches—loamy fine sand; 0 to 15 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.8); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
8 to 18 inches—loamy fine sand; 0 to 15 percent pebbles (by weight); subangular blocky structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2, A-4
18 to 60 inches—loamy sand; 0 to 15 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.6); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: In the upper 18 inches—moderately slow; below that depth—rapid
Available water capacity: 4.0 to 5.1 inches
Water-supplying capacity: About 8 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—2
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex erosional fan piedmont remnants
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Concave inset fans adjacent to channels
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave side slopes of fan piedmont remnants
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Gwena soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Enko soil for named elements: Grain and seed crops (irrigated)—good; domestic grasses and legumes (irrigated)—good; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Frewa soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Gwena soil for selected uses and practices

Range seeding: Poor—too crusty, droughty, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, small stones
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Enko soil for selected uses and practices

Range seeding: Fair—too arid
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—frost action
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Soil blowing, percs slowly, slope
Terraces and diversions: Erodes easily, soil blowing

Ratings and restrictive features of the Frewa soil for selected uses and practices

Range seeding: Poor—soil blowing, droughty
Daily cover for landfill: Fair—small stones, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, fast intake, slope
Terraces and diversions: Too sandy, soil blowing

Interpretive Groups

Capability classification: Gwena—VIIs, nonirrigated; Enko—IVe, irrigated, and VIs, nonirrigated; Frewa—IIIe, irrigated, and VIs, nonirrigated
Range site: Gwena—024X020N; Enko—024X020N; Frewa—024X020N

1290—Slaven-Linrose-Iver association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 70 days

Composition

Major components:
• Slaven very cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—40 percent
• Linrose very gravelly loam, 50 to 75 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—25 percent

• Iver stony silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, coarse-loamy, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Cleavage very gravelly loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 2: Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Cleavage extremely gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Fluventic Haploxerolls loam, 2 to 8 percent slopes—Fluventic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Slaven Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum somewhat influenced by loess that contains volcanic ash; source—chert, shale, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—46

Typical profile

0 to 5 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-4
5 to 36 inches—extremely gravelly clay; 0 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
36 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.8 to 3.9 inches
Water-supplying capacity: About 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Linrose Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—shale, chert
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—51

Typical profile

0 to 10 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2, A-4
10 to 23 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, GM-GC; estimated AASHTO classification—A-2
23 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.0 to 3.4 inches
Water-supplying capacity: About 10 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.17; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Iver Soil

Position on landscape: North- and east-facing side slopes of mountains

Parent material: Kind—residuum; source—sandstone, shale, quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, stones; percentage of surface covered—11

Typical profile

0 to 4 inches—stony silt loam; 5 to 10 percent cobbles and stones and 5 to 10 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—ML; estimated AASHTO classification—A-4
4 to 20 inches—silt loam; 0 to 25 percent pebbles (by weight); massive; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
20 to 31 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4
31 to 60 inches—very cobbly loam; 45 to 55 percent cobbles and stones and 15 to 50 percent pebbles (by weight); massive; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 7.3 to 8.7 inches
Water-supplying capacity: About 13 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, north- and east-facing side slopes of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 2
Position on landscape: Convex, south- and west-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 4
Position on landscape: Concave toe slopes adjacent to drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Other minor inclusions
• Barren areas of rock outcrop on the crests and upper side slopes of mountains

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Linrose soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Iver soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Slaven soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Linrose soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Iver soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Slaven—VIIs, nonirrigated; Linrose—VIIs, nonirrigated; Iver—VIIe, nonirrigated
Range site: Slaven—024X029N; Linrose—024X042N; Iver—024X023N

1291—Slaven-Iver-Cleavage association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Slaven gravelly very fine sandy loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey, montmorillonitic, frigid—35 percent
• Iver gravelly silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, coarse-loamy, mixed, frigid—30 percent
• Cleavage very gravelly loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—20 percent
Contrasting inclusions:
• Inclusion 1: Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—8 percent
• Inclusion 2: Rock outcrop—3 percent
• Inclusion 3: Fluventic Haploxerolls loam, 2 to 8 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, frigid—2 percent
• Inclusion 4: Cleavage extremely gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Slaven Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum influenced by loess that contains ash; source—chert, shale, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye
Rock fragments on the surface: Kind—gravel; percentage of surface covered—20

Typical profile

0 to 5 inches—gravelly very fine sandy loam; 35 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-4
5 to 36 inches—extremely gravelly clay; 0 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
36 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.8 to 3.9 inches
Water-supplying capacity: About 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.32; T value—2; wind erodibility group—4
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Iver Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—sandstone, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue

Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—25

Typical profile

0 to 4 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4

4 to 20 inches—silt loam; 0 to 25 percent pebbles (by weight); massive; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

20 to 31 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4

31 to 60 inches—very cobbly loam; 45 to 55 percent cobbles and stones and 15 to 50 percent pebbles (by weight); massive; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 7.3 to 8.7 inches
Water-supplying capacity: About 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—igneous flow rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, bluebunch wheatgrass, bluegrass

Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 10 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6

10 to 17 inches—very gravelly clay loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.5); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2

17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.9 to 2.2 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south- and west-facing side slopes of mountains
Distinctive present vegetation: Bluebunch wheatgrass, Wyoming big sagebrush

Inclusion 2
Position on landscape: Crests and side slopes of mountains
Distinctive present vegetation: Barren

Inclusion 3
Position on landscape: Drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 4
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Idaho fescue, basin big sagebrush

Other minor inclusions
• On north-facing side slopes of mountains, areas that support threetip sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Iver soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Slaven soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Iver soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—slope, large stones
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings and restrictive features of the Cleavage soil for selected uses and practices

Range seeding: Poor—droughty, small stones, slope
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—slope, depth to bedrock
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Slaven—VIIe, nonirrigated; Iver—VIIe, nonirrigated; Cleavage—VIIs, nonirrigated
Range site: Slaven—024X029N; Iver—024X023N; Cleavage—024X027N

1292—Slaven-Iver-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,200 to 8,000 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Slaven very cobbly loam, 50 to 75 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—35 percent
• Iver stony silt loam, 50 to 75 percent slopes—Pachic Haploxerolls, coarse-loamy, mixed, frigid—35 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Cleavage very gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—9 percent
• Inclusion 2: Pachic Cryoborolls cobbly loam, 15 to 30 percent slopes—Pachic Cryoborolls, loamy-skeletal, mixed—4 percent
• Inclusion 3: Cumulic Haploxerolls silt loam, 4 to 15 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—2 percent

Characteristics of the Slaven Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—chert, shale, quartzite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—46

Typical profile

0 to 5 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral

(pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-4

5 to 36 inches—extremely gravelly clay; 0 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2

36 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.8 to 3.9 inches
Water-supplying capacity: About 10 inches
Runoff: Very rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Iver Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—sandstone, shale, quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, stones; percentage of surface covered—11

Typical profile

0 to 4 inches—stony silt loam; 5 to 10 percent cobbles and stones and 5 to 10 percent pebbles (by weight); granular structure; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

4 to 20 inches—silt loam; 0 to 25 percent pebbles (by weight); massive; soft, very friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

20 to 31 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4

31 to 60 inches—very cobbly loam; 45 to 55 percent cobbles and stones and 15 to 50 percent pebbles (by weight); massive; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, SM-SC, CL-ML; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 7.3 to 8.7 inches
Water-supplying capacity: About 13 inches
Runoff: Very rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Crests and side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 2
Position on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush, serviceberry
Inclusion 3
Position on landscape: The concave upper part of north-facing side slopes on mountains
Distinctive present vegetation: Quaking aspen

Major Uses

Current uses: Wildlife habitat

Wildlife habitat elements

Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Iver soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Slaven soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Iver soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—large stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping

Interpretive Groups

Capability classification: Slaven—VIIs, nonirrigated; Iver—VIIe, nonirrigated; Rock outcrop—VIIIs
Range site: Slaven—024X029N; Iver—024X023N

1320—Alyan-Chen-Rock outcrop association

Map Unit Setting

Position on landscape: Buttes
Elevation: 6,500 to 7,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Alyan extremely stony loam, 15 to 30 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—40 percent
• Chen very stony loam, 4 to 15 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Aridic Argixerolls very stony loam, 30 to 50 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—9 percent
• Inclusion 2: Aridic Argixerolls very stony loam, 4 to 15 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, coarse-loamy, mixed, frigid—1 percent

Characteristics of the Alyan Soil

Position on landscape: Side slopes of buttes
Parent material: Kind—residuum; source—siliceous tuff, other volcanic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, basin wildrye, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 11 inches—extremely stony loam; 25 to 45 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
11 to 33 inches—gravelly clay; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7
33 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 3.2 to 4.8 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8

Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Chen Soil

Position on landscape: Summits of buttes
Parent material: Kind—residuum influenced by loess high in content of volcanic ash; source—rhyolite, andesite, volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, bluebunch wheatgrass, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—30

Typical profile

0 to 10 inches—very stony loam; 15 to 35 percent cobbles and stones and 10 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GM, CL-ML, ML; estimated AASHTO classification—A-4
10 to 19 inches—very gravelly clay; 15 to 45 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 6.9); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2, A-7
19 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.5 to 2.9 inches
Water-supplying capacity: About 11 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Rims of buttes
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of buttes
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 2
Position on landscape: Convex summits and shoulder slopes of buttes
Distinctive present vegetation: Threetip sagebrush
Inclusion 3
Position on landscape: Toe slopes along drainage channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Alyan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Chen soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Alyan soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, hard to pack
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Chen soil for selected uses and practices

Range seeding: Poor—large stones, droughty
Daily cover for landfill: Poor—depth to bedrock, too clayey, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope

Embankments, dikes, and levees: Severe—thin layer, large stones

Interpretive Groups

Capability classification: Alyan—VIIs, nonirrigated; Chen—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Alyan—024X021N; Chen—024X027N

1321—Alyan-Slaven association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,500 to 7,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Alyan extremely stony loam, 15 to 30 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—45 percent
• Slaven very cobbly loam, 15 to 30 percent slopes—Aridic Argixerolls, clayey-skeletal, montmorillonitic, frigid—40 percent
Contrasting inclusions:
• Inclusion 1: Lithic Argixerolls very cobbly loam, 4 to 15 percent slopes—Lithic Argixerolls, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 2: Aridic Argixerolls cobbly loam, 30 to 50 percent slopes—Aridic Argixerolls, fine, montmorillonitic, frigid—4 percent
• Inclusion 3: Cumulic Haploxerolls loam, 0 to 4 percent slopes—Cumulic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Rock outcrop—3 percent

Characteristics of the Alyan Soil

Position on landscape: North-facing back slopes of mountains
Parent material: Kind—residuum; source—igneous rocks, siliceous tuff
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, basin wildrye
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 11 inches—extremely stony loam; 25 to 45 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML; estimated AASHTO classification—A-4
11 to 33 inches—gravelly clay; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL, CH; estimated AASHTO classification—A-7
33 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 3.2 to 4.8 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Slaven Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum influenced by loess; source—chert, shale, volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—46

Typical profile

0 to 5 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-4
5 to 36 inches—extremely gravelly clay; 0 to 15 percent cobbles and stones and 75 to 85 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
36 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.8 to 3.9 inches
Water-supplying capacity: About 12 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.20; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Bluebunch wheatgrass, mountain big sagebrush
Inclusion 2
Position on landscape: Convex, north-facing side slopes of mountains
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 3
Position on landscape: Areas near drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush
Inclusion 4
Position on landscape: Scattered small peaks and ridges
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Alyan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Slaven soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Alyan soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, hard to pack
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Slaven soil for selected uses and practices

Range seeding: Poor—small stones
Daily cover for landfill: Poor—depth to bedrock, slope, small stones
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, too clayey
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Alyan—VIIs, nonirrigated; Slaven—VIIs, nonirrigated
Range site: Alyan—024X021N; Slaven—024X029N

1340—Laped-Colbar association

Map Unit Setting

Position on landscape: Side slopes of foothills
Elevation: 5,000 to 6,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 100 days

Composition

Major components:
• Laped very cobbly loam, 30 to 50 percent slopes—Typic Durargids, loamy, mixed, mesic, shallow—55 percent
• Colbar very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, fine-loamy, mixed, mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Typic Haplargids very cobbly loam, 30 to 50 percent slopes—Typic Haplargids, fine, montmorillonitic, mesic—9 percent
• Inclusion 2: Lithic Haplargids very cobbly loam, 4 to 15 percent slopes—Lithic Haplargids, clayey-skeletal, montmorillonitic, mesic—4 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Laped Soil

Position on landscape: South-facing side slopes of foothills
Parent material: Kind—colluvium, residuum; source—rhyolitic tuff, andesite, basalt
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—37

Typical profile

0 to 5 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, GM-GC; estimated AASHTO classification—A-4
5 to 18 inches—gravelly clay loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-6, A-7
18 to 22 inches—indurated layer; massive; extremely hard, extremely firm
22 inches—unweathered bedrock

Soil and water features

Depth to a hardpan: 14 to 20 inches
Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.2 to 2.6 inches
Water-supplying capacity: About 5 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Colbar Soil

Position on landscape: North-facing side slopes of foothills
Parent material: Kind—colluvium, residuum; source—andesite, rhyolite
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 1 inch—very cobbly loam; 50 to 60 percent cobbles and stones and 5 to 15 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
1 to 24 inches—cobbly loam; 10 to 35 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6
24 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 3.1 to 3.6 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, south-facing side slopes of foothills
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 2
Position on landscape: Crests and shoulder slopes of foothills
Distinctive present vegetation: Wyoming big sagebrush, shadscale
Inclusion 3
Position on landscape: The crests and upper side slopes of foothills
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Laped soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Colbar soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Laped soil for selected uses and practices

Range seeding: Poor—too arid, erodes easily, large stones
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, cemented pan, slope
Local roads and streets: Severe—cemented pan, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, slope
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Colbar soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, large stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—large stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Laped—VIIs, nonirrigated; Colbar—VIIs, nonirrigated
Range site: Laped—024X002N; Colbar—024X005N

1350—Burnborough-Cleavage-Reluctan association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,000 to 8,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Burnborough very gravelly loam, 15 to 30 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—40 percent
• Cleavage very gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—30 percent
• Reluctan gravelly loam, 15 to 30 percent slopes—Aridic Argixerolls, fine-loamy, mixed, frigid—15 percent
Contrasting inclusions:
• Inclusion 1: Hopeka very cobbly loam, 15 to 30 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid—5 percent
• Inclusion 2: Pachic Argixerolls gravelly silt loam, 2 to 8 percent slopes—Pachic Argixerolls, fine-loamy, mixed, frigid—5 percent
• Inclusion 3: Rock outcrop—4 percent
• Inclusion 4: Cumulic Haplaquolls silt loam, 0 to 2 percent slopes—Cumulic Haplaquolls, fine-silty, mixed, frigid—1 percent

Characteristics of the Burnborough Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, rhyolite
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, basin wildrye, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 13 inches—very gravelly loam; 5 to 10 percent cobbles and stones and 45 to 60 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, SM-SC; estimated AASHTO classification—A-2
13 to 60 inches—very gravelly loam; 15 to 25 percent cobbles and stones and 40 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches

Flooding: None
Permeability: Moderate
Available water capacity: 5.1 to 6.9 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Cleavage Soil

Position on landscape: Shoulder slopes and crests of mountains
Parent material: Kind—residuum; source—rhyolite, andesite
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, bluebunch wheatgrass, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—55

Typical profile

0 to 10 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6
10 to 17 inches—very gravelly loam; 0 to 45 percent cobbles and stones and 55 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.9 to 2.2 inches
Water-supplying capacity: About 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Reluctan Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolite, andesite
Slope features: Length—short; shape—convex
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue, scattered Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 9 inches—gravelly loam; 5 to 10 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4
9 to 25 inches—gravelly clay loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
25 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.7 to 3.4 inches
Water-supplying capacity: About 11 inches
Runoff: Rapid
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1

Position on landscape: The convex upper part of side slopes on mountains
Distinctive present vegetation: Singleleaf pinyon, Utah juniper

Inclusion 2
Position on landscape: Concave inset fans on valley fans in the mountains
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 3
Position on landscape: The upper part of side slopes on mountains
Distinctive present vegetation: Barren
Inclusion 4
Position on landscape: Concave valley fans on mountains
Distinctive present vegetation: Sedge

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Burnborough soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Cleavage soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Reluctan soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Burnborough soil for selected uses and practices

Range seeding: Poor—small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Moderate—large stones

Ratings and restrictive features of the Cleavage soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Reluctan soil for selected uses and practices

Range seeding: Fair—too arid, small stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Burnborough—VIIs, nonirrigated; Cleavage—VIIs, nonirrigated; Reluctan—VIIe, nonirrigated
Range site: Burnborough—024X021N; Cleavage—024X027N; Reluctan—024X021N

1360—Kram-Hopeka-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,500 to 7,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 90 days

Composition

Major components:
• Kram very gravelly very fine sandy loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, mesic—35 percent
• Hopeka very gravelly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, carbonatic, frigid—35 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Iver gravelly silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, coarse-loamy, mixed, frigid—9 percent
• Inclusion 2: Sumine very gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 3: Puffer very gravelly loam, 4 to 15 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—2 percent

Characteristics of the Kram Soil

Position on landscape: Foot slopes and side slopes of mountains

Parent material: Kind—residuum; source—limestone, dolomite
Slope features: Length—long; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—61

Typical profile

0 to 2 inches—very gravelly very fine sandy loam; 10 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
2 to 8 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 45 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 6 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.8 to 1.0 inch
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Hopeka Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—limestone, dolomite
Slope features: Length—long; shape—plane to convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—61

Typical profile

0 to 10 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 10 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.7 inch
Water-supplying capacity: About 8 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Crests and side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, south-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush
Inclusion 2
Position on landscape: Convex, north-facing side slopes of mountains
Distinctive present vegetation: Mountain big sagebrush
Inclusion 3
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Black sagebrush

Major Uses

Current uses: Wildlife habitat, woodland

Ratings of the Kram soil for use as woodland

Site index for common trees: Singleleaf pinyon—25; Utah juniper—25
Most important native understory plants: Bluebunch wheatgrass, black sagebrush

Ratings of the Hopeka soil for use as woodland

Site index for common trees: Singleleaf pinyon—20; Utah juniper—20

Most important native understory plants: Bluebunch wheatgrass, black sagebrush

Wildlife habitat elements

Suitability of the Kram soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Suitability of the Hopeka soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Kram soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Hopeka soil for selected uses and practices

Range seeding: Poor—too arid, droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Kram—VIIs, nonirrigated; Hopeka—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Kram—024X051N; Hopeka—024X051N
Woodland suitability group: Kram—3R; Hopeka—3R

1390—Mulhop-Xine-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
- Mulhop cobbly loam, 30 to 50 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—40 percent
- Xine gravelly silt loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—30 percent
- Rock outcrop—20 percent

Contrasting inclusions:
- Inclusion 1: Iver gravelly silt loam, 30 to 50 percent slopes—Pachic Haploxerolls, coarse-loamy, mixed, frigid—5 percent
- Inclusion 2: Cleavage extremely gravelly loam, 4 to 15 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—4 percent
- Inclusion 3: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, coarse-loamy, mixed, frigid—1 percent

Characteristics of the Mulhop Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone
Slope features: Length—long; shape—convex
Dominant present vegetation: Utah juniper, black sagebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—25

Typical profile

0 to 6 inches—cobbly loam; 15 to 30 percent cobbles and stones and 10 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, CL-ML; estimated AASHTO classification—A-4

6 to 17 inches—very gravelly loam; 15 to 30 percent cobbles and stones and 40 to 65 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6

17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None

Permeability: Moderate
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: About 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Xine Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—31

Typical profile

0 to 10 inches—gravelly silt loam; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
10 to 38 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 35 to 60 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4, A-1
38 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 4.1 inches
Water-supplying capacity: About 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 2
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 3
Position on landscape: Concave toe slopes adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat
Foreseeable uses: Rangeland, wildlife habitat, woodland

Ratings of the Mulhop soil for use as woodland

Site index for common trees: Utah juniper—20
Most important native understory plants: Black sagebrush, bottlebrush squirreltail, Sandberg bluegrass, basin wildrye

Wildlife habitat elements

Suitability of the Mulhop soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—poor; coniferous plants (nonirrigated)—fair
Suitability of the Xine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Mulhop soil for selected uses and practices

Range seeding: Poor—large stones, droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope

Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer, large stones

Ratings and restrictive features of the Xine soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—large stones, slope, depth to bedrock
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Mulhop—VIIe, nonirrigated; Xine—VIIe, nonirrigated; Rock outcrop—VIIIs
Range site: Mulhop—027X075N; Xine—024X021N
Woodland suitability group: Mulhop—3R

1410—Yobe-Bezo-Yobe, occasionally flooded, association

Map Unit Setting

Position on landscape: Lake plains
Elevation: 4,000 to 4,200 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Yobe silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—30 percent
• Bezo silty clay, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—40 percent
• Yobe silt loam, occasionally flooded, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Typic Torriorthents silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Typic Torrifluvents silt loam, 0 to 2 percent slopes—Typic Torrifluvents, fine-silty, mixed (calcareous), mesic—3 percent
• Inclusion 3: Goldrun Variant sandy loam, 4 to 15 percent slopes—Typic Torriorthents, coarse-loamy, gypsic, mesic—2 percent

Characteristics of the Rarely Flooded Yobe Soil

Position on landscape: The slightly higher areas on lake plain terraces
Parent material: Lacustrine sediments
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Torrey quailbush, black greasewood, buffaloberry, inland saltgrass

Typical profile

0 to 14 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6
14 to 60 inches—stratified very fine sandy loam to silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 24 to 40); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: November through May—36 to 60 inches; rest of year—more than 60 inches
Flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 10 inches
Runoff: Ponded
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Bezo Soil

Position on landscape: Lake plain terraces
Parent material: Lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Torrey quailbush, black greasewood, seepweed

Typical profile

0 to 3 inches—silty clay; platy structure; hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CH, CL, MH; estimated AASHTO classification—A-7
3 to 42 inches—silty clay loam; massive; slightly hard,

friable; moderately alkaline (pH 8.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

42 to 60 inches or more—silty clay; massive; slightly hard, friable; moderately alkaline (pH 8.2); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CH, CL, MH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: February through June—12 to 24 inches; rest of year—more than 60 inches

Flooding: Frequency—occasional; duration—brief; months—January through May

Permeability: Slow

Available water capacity: 10.0 to 11.0 inches

Water-supplying capacity: About 20 to 25 inches

Runoff: Ponded

Hydrologic group: D

Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: High

Corrosivity: To steel—high; to concrete—high

Potential for frost action: High

Characteristics of the Occasionally Flooded Yobe Soil

Position on landscape: The channelized lower areas of lake plain terraces

Parent material: Lacustrine sediments

Slope features: Length—long; shape—slightly concave

Dominant present vegetation: Black greasewood, basin wildrye

Typical profile

0 to 14 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CL-ML; estimated Unified classification—A-4, A-6

14 to 60 inches—stratified very fine sandy loam to silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: November through May—36 to 60 inches; rest of year—more than 60 inches

Flooding: Frequency—occasional; duration—brief; months—February through June

Permeability: Moderately slow

Available water capacity: 11.0 to 12.0 inches

Water-supplying capacity: About 20 to 25 inches

Runoff: Very slow

Hydrologic group: C

Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L

Hazard of erosion: By water—slight; by wind—slight

Shrink-swell potential: Moderate

Corrosivity: To steel—high; to concrete—high

Potential for frost action: High

Contrasting Inclusions

Inclusion 1

Position on landscape: Channels on the higher lake plain terraces

Distinctive present vegetation: Basin big sagebrush

Inclusion 2

Position on landscape: Channels on the lower lake plain terraces

Distinctive present vegetation: Basin wildrye, Torrey quailbush

Inclusion 3

Position on landscape: Convex parna dunes on edges of lake plains

Distinctive present vegetation: Torrey quailbush, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the rarely flooded Yobe soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the Bezo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the occasionally flooded Yobe soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the rarely flooded Yobe soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too arid

Daily cover for landfill: Poor—excess sodium

Shallow excavations: Moderate—wetness

Local roads and streets: Severe—low strength, frost action

Roadfill: Poor—low strength

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings and restrictive features of the Bezo soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too arid
Daily cover for landfill: Poor—wetness, excess salt, excess sodium
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey, excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess salt, excess sodium

Ratings and restrictive features of the occasionally flooded Yobe soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too arid
Daily cover for landfill: Poor—excess sodium, excess salt
Shallow excavations: Moderate—wetness, flooding
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Yobe, rarely flooded—VIIw, nonirrigated; Bezo—VIIw, nonirrigated; Yobe, occasionally flooded—VIIw, nonirrigated
Range site: Yobe, rarely flooded—024X015N; Bezo—027X044N; Yobe, occasionally flooded—024X011N

1411—Yobe-Sonoma association

Map Unit Setting

Position on landscape: Basin floors
Elevation: 4,000 to 4,800 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Yobe silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—55 percent
• Sonoma silt loam, frequently flooded, strongly saline, 0 to 2 percent slopes—Aeric Fluvaquents, fine-silty, mixed (calcareous), mesic—30 percent
Contrasting inclusions:
• Inclusion 1: Yipor silt loam, 0 to 2 percent slopes—Typic Torriorthents, coarse-silty, mixed (calcareous), mesic—9 percent
• Inclusion 2: Typic Torriorthents silt loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Aeric Halaquepts silt loam, 0 to 2 percent slopes—Aeric Halaquepts, coarse-silty, mixed (calcareous), mesic—2 percent

Characteristics of the Yobe Soil

Position on landscape: Alluvial flats adjacent to flood plains
Parent material: Lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Torrey quailbush, black greasewood, basin wildrye, rabbitbrush

Typical profile

0 to 14 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6
14 to 60 inches or more—stratified very fine sandy loam to silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: November through May—36 to 60 inches; rest of year—more than 60 inches
Flooding: Rare
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 10 inches
Runoff: Ponded
Hydrologic group: C

Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Sonoma Soil

Position on landscape: Flood plains
Parent material: Mixed silty alluvium influenced by volcanic ash
Slope features: Length—long; shape—smooth
Dominant present vegetation: Alkali sacaton, inland saltgrass, black greasewood

Typical profile

0 to 9 inches—silt loam; platy structure; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL; estimated AASHTO classification—A-6
9 to 60 inches—stratified silt loam to silty clay loam; massive; hard, firm; strongly alkaline (pH 8.8); nonsaline or slightly saline (2 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-6, A-7

Soil and water features

Depth to a seasonal high water table: February through January—18 to 36 inches
Flooding: Frequency—frequent; duration—brief; months—February through January
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 14 inches
Runoff: Ponded
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Flood plains in areas of deeply channelized axial streams
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Position on landscape: Convex alluvial fans
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 3
Position on landscape: The higher flood plains in areas of slightly channelized streams
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Yobe soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Sonoma soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Yobe soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium
Shallow excavations: Moderate—wetness
Local roads and streets: Severe—low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Ratings and restrictive features of the Sonoma soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Fair—too clayey, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, flooding, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, too clayey
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—wetness, excess salt

Interpretive Groups

Capability classification: Yobe—VIIw, nonirrigated; Sonoma—VIIw, nonirrigated
Range site: Yobe—024X015N; Sonoma—024X009N

1412—Yobe silt loam, occasionally flooded

Map Unit Setting

Position on landscape: Lake plains
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Yobe silt loam, occasionally flooded, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Benin silt loam, 0 to 2 percent slopes—Typic Torriorthents, fine, montmorillonitic (calcareous), mesic—4 percent
• Inclusion 2: Dun Glen silt loam, 0 to 2 percent slopes—Typic Camborthids, coarse-loamy, mixed, mesic—3 percent
• Inclusion 3: Raglan silt loam, 0 to 2 percent slopes—Duric Camborthids, fine-loamy, mixed, mesic—2 percent
• Inclusion 4: Wendane silt loam, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—1 percent

Characteristics of the Yobe Soil

Position on landscape: Lake plains
Parent material: Mixed lake sediments
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Black greasewood, basin wildrye, seepweed

Typical profile

0 to 14 inches—silt loam; platy structure; slightly hard, friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CL, CL-ML; estimated AASHTO classification—A-4, A-6
14 to 60 inches—stratified very fine sandy loam to silty clay loam; massive; slightly hard, friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: November through May—36 to 60 inches; rest of year—more than 60 inches
Flooding: Frequency—occasional; duration—brief; months—February through June
Permeability: Moderately slow
Available water capacity: 11.0 to 12.0 inches
Water-supplying capacity: About 15 inches
Runoff: Ponded
Hydrologic group: C
Erosion factors (surface layer): K value—.43; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Slightly convex alluvial flats adjacent to lake plains
Distinctive present vegetation: Shadscale, black greasewood
Inclusion 2
Position on landscape: Smooth fan skirts
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Slightly convex alluvial flats adjacent to lake plains
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 4
Position on landscape: Slightly concave alluvial flats
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Yobe soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Yobe soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium, too crusty
Daily cover for landfill: Poor—excess sodium, excess salt
Shallow excavations: Moderate—flooding, wetness
Local roads and streets: Severe—flooding, low strength, frost action
Roadfill: Poor—low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess salt, excess sodium
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X011N

1420—Goldrun Variant sandy loam, 4 to 15 percent slopes

Map Unit Setting

Position on landscape: Parna dunes
Elevation: 4,050 to 4,150 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 54 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Goldrun Variant sandy loam, 4 to 15 percent slopes—Typic Torriorthents, coarse-loamy, gypsic (calcareous), mesic—90 percent
Contrasting inclusions:
• Inclusion 1: Bezo silty clay, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Yobe Variant silty clay, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—5 percent

Characteristics of the Goldrun Variant Soil

Position on landscape: Parna dunes
Parent material: Eolian material
Slope features: Length—short; shape—convex
Dominant present vegetation: Black greasewood, shadscale, seepweed

Typical profile

0 to 4 inches—sandy loam; platy structure; soft, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR 24 to 45); estimated Unified classification—SM; estimated AASHTO classification—A-4
4 to 60 inches—gypsiferous material

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 1.8 to 3.0 inches
Water-supplying capacity: About 4 to 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Smooth alluvial flats on the outer basin side of parna dunes
Distinctive present vegetation: Torrey quailbush
Inclusion 2
Position on landscape: Smooth lake plains on the inner basin side of parna dunes
Distinctive present vegetation: Iodinebush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Goldrun Variant soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Goldrun Variant soil for selected uses and practices

Range seeding: Poor—excess salt, too arid
Daily cover for landfill: Poor—excess lime
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Severe—unstable fill
Roadfill: Poor—excess gypsum
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess lime
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—excess gypsum

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: 027X036N

1430—Yobe Variant silty clay

Map Unit Setting

Position on landscape: Lake plains
Elevation: 4,000 to 5,000 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 52 degrees F
Frost-free period: About 120 days

Composition

Major component:
• Yobe Variant silty clay, 0 to 2 percent slopes—Aeric Halaquepts, fine, montmorillonitic (calcareous), mesic—90 percent

Contrasting inclusions:
• Inclusion 1: Bezo silty clay, 0 to 2 percent slopes—Aeric Halaquepts, fine-silty, mixed (calcareous), mesic—5 percent
• Inclusion 2: Goldrun Variant sandy loam, 2 to 8 percent slopes—Typic Torriorthents, coarse-loamy, gypsic, mesic—5 percent

Characteristics of the Yobe Variant Soil

Position on landscape: Lake plains
Parent material: Lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Iodinebush, alkali sacaton

Typical profile

0 to 8 inches—silty clay; platy structure; hard, friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR 46 to 100); estimated Unified classification—MH, CH; estimated AASHTO classification—A-7
8 to 60 inches—silty clay; platy structure; hard, friable; strongly alkaline (pH 8.6); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—MH, CH; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: January through July—6 to 18 inches; rest of year—more than 60 inches
Flooding: Frequency—frequent; duration—brief; months—January through June
Permeability: Very slow
Available water capacity: 9.0 to 10.0 inches
Water-supplying capacity: About 15 inches
Runoff: Ponded
Hydrologic group: D
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: The smooth upper part of lake plains
Distinctive present vegetation: Torrey quailbush
Inclusion 2
Position on landscape: Convex parna dunes
Distinctive present vegetation: Black greasewood

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Yobe Variant soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Yobe Variant soil for selected uses and practices

Range seeding: Poor—excess salt, excess sodium
Daily cover for landfill: Poor—too clayey, hard to pack, wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—low strength, wetness, flooding
Roadfill: Poor—low strength, wetness, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey, excess salt, wetness
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—hard to pack, wetness, excess salt

Interpretive Groups

Capability classification: VIIw, nonirrigated
Range site: 024X010N

1450—Alley-Snowmore-Rock outcrop association

Map Unit Setting

Position on landscape: Hills
Elevation: 4,800 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Alley very cobbly very fine sandy loam, 30 to 50 percent slopes—Durixerollic Haplargids, fine-loamy, mixed, mesic—40 percent
• Snowmore very cobbly loam, 2 to 8 percent slopes—Xerollic Durargids, fine-loamy, mixed, mesic—30 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Rubble land—5 percent
• Inclusion 2: Roca very cobbly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—5 percent
• Inclusion 3: Aridic Argixerolls gravelly loam, 30 to 50

percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—4 percent
• Inclusion 4: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, mesic—1 percent

Characteristics of the Alley Soil

Position on landscape: Side slopes of hills
Parent material: Kind—residuum, colluvium; source—basalt
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 5 inches—very cobbly very fine sandy loam; 30 to 40 percent cobbles and stones and 30 to 50 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GM, SM-SC, SM; estimated AASHTO classification—A-2
5 to 22 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, GC; estimated AASHTO classification—A-6
22 to 30 inches—cobbly fine sandy loam; 0 to 40 percent cobbles and stones and 20 to 30 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM, GM; estimated AASHTO classification—A-2, A-4
30 to 60 inches—very cobbly fine sandy loam; 30 to 45 percent cobbles and stones and 30 to 40 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SM; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 5.9 to 7.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.05; T value—5; wind erodibility group—5
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Snowmore Soil

Position on landscape: Summits of hills
Parent material: Kind—residuum; source—basalt
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 8 inches—very cobbly loam; 40 to 50 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC, GC, CL-ML, CL; estimated AASHTO classification—A-4, A-6
8 to 16 inches—clay loam; 0 to 10 percent cobbles and stones and 0 to 15 percent pebbles (by weight); subangular blocky structure; hard, friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6
16 to 24 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 25 to 35 percent pebbles (by weight); massive; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
24 to 28 inches—indurated layer; extremely hard, extremely firm
28 inches—unweathered bedrock

Soil and water features

Depth to a hardpan: 20 to 40 inches
Depth to bedrock: 24 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 3.5 to 4.0 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: C

Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: The summits and upper side slopes of hills
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex side slopes of hills
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: The convex upper side slopes of hills
Distinctive present vegetation: Bluebunch wheatgrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave, north-facing side slopes of hills
Distinctive present vegetation: Mountain big sagebrush, Idaho fescue
Inclusion 4
Position on landscape: Drainageways
Distinctive present vegetation: Basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Alley soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Snowmore soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Alley soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—piping

Ratings and restrictive features of the Snowmore soil for selected uses and practices

Range seeding: Poor—large stones
Daily cover for landfill: Poor—depth to bedrock, cemented pan
Shallow excavations: Severe—depth to bedrock, cemented pan
Local roads and streets: Severe—low strength
Roadfill: Poor—depth to bedrock, cemented pan, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Moderate—depth to bedrock, cemented pan, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Alley—VIIs, nonirrigated; Snowmore—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Alley—024X005N; Snowmore—024X005N

1480—Tusel-Layview-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,300 to 9,700 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 65 days

Composition

Major components:
• Tusel cobbly loam, 30 to 50 percent slopes—Argic Pachic Cryoborolls, loamy-skeletal, mixed—45 percent
• Layview very gravelly loam, 50 to 75 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—20 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Layview extremely gravelly loam, 4 to 15 percent slopes—Argic Lithic Cryoborolls, loamy-skeletal, mixed—5 percent
• Inclusion 2: Aridic Argixerolls cobbly loam, 50 to 75 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Aridic Haploxerolls cobbly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—3 percent
• Inclusion 4: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, frigid—2 percent

Characteristics of the Tusel Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—shale, chert, quartzite
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, mountain brome, Idaho fescue, slender wheatgrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—16

Typical profile

0 to 12 inches—cobbly loam; 15 to 35 percent cobbles and stones and 10 to 25 percent pebbles (by weight); granular structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM, ML, SM-SC, CL-ML; estimated AASHTO classification—A-4
12 to 42 inches—very gravelly clay loam; 15 to 45 percent cobbles and stones and 60 to 75 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; neutral (pH 6.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
42 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 3.8 to 4.9 inches
Water-supplying capacity: About 14 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—3; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Layview Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—80

Typical profile

0 to 7 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2
7 to 14 inches—very gravelly loam; 10 to 15 percent cobbles and stones and 45 to 70 percent pebbles (by weight); massive; slightly hard, friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2, A-6
14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 14 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.0 to 1.4 inches
Water-supplying capacity: About 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: The crests and upper side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Idaho fescue, low sagebrush
Inclusion 2
Position on landscape: The concave lower part of side slopes on mountains
Distinctive present vegetation: Idaho fescue, mountain big sagebrush
Inclusion 3
Position on landscape: Mountaintops, the upper part of side slopes on mountains, areas adjacent to Rock outcrop
Distinctive present vegetation: Serviceberry, oceanspray

Inclusion 4
Position on landscape: Toe slopes adjacent to drainageways
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Tusel soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Layview soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Tusel soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—slope, small stones
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Layview soil for selected uses and practices

Range seeding: Poor—droughty, small stones
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Tusel—VIIe, nonirrigated; Layview—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Tusel—024X032N; Layview—024X027N

1490—Xine-Mulhop-Puffer association

Map Unit Setting

Position on landscape: Mountains
Elevation: 5,800 to 7,500 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 46 degrees F
Frost-free period: About 85 days

Composition

Major components:
• Xine very gravelly loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—40 percent
• Mulhop very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—30 percent
• Puffer very cobbly loam, 30 to 50 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—7 percent
• Inclusion 2: Mulhop extremely stony loam, 4 to 15 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Aridic Argixerolls gravelly loam, 30 to 50 percent slopes—Aridic Argixerolls, loamy-skeletal, mixed, frigid—2 percent
• Inclusion 4: Fluventic Haploxerolls loam, 0 to 2 percent slopes—Fluventic Haploxerolls, loamy-skeletal, mixed, frigid—1 percent

Characteristics of the Xine Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 10 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
10 to 38 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 35 to 60 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4

38 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 4.1 inches
Water-supplying capacity: About 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Mulhop Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone
Slope features: Length—long; shape—convex
Dominant present vegetation: Utah juniper, black sagebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 6 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
6 to 17 inches—very gravelly loam; 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GC; estimated AASHTO classification—A-2, A-4, A-6
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 1.5 to 2.0 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Puffer Soil

Position on landscape: South-facing foot slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—60

Typical profile

0 to 2 inches—very cobbly loam; 25 to 40 percent cobbles and stones and 35 to 60 percent pebbles (by weight); platy structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM-GC; estimated AASHTO classification—A-2, A-4
2 to 11 inches—very gravelly loam; 15 to 40 percent cobbles and stones and 50 to 80 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GC, GM-GC; estimated AASHTO classification—A-2
11 to 12 inches—weathered bedrock
12 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 11 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.6 inch to 1.1 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Scattered small peaks and ridges
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Utah juniper, black sagebrush
Inclusion 3
Position on landscape: North-facing shoulder slopes of mountains
Distinctive present vegetation: Threetip sagebrush
Inclusion 4
Position on landscape: Concave toe slopes adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Ratings of the Mulhop soil for use as woodland

Site index for common trees: Utah juniper—20
Most important native understory plants: Black sagebrush, bottlebrush squirreltail, Sandberg bluegrass, basin wildrye

Wildlife habitat elements

Suitability of the Xine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Mulhop soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—poor; coniferous plants (nonirrigated)—fair
Suitability of the Puffer soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Xine soil for selected uses and practices

Range seeding: Poor—small stones
Daily cover for landfill: Poor—large stones, slope, depth to bedrock
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the Mulhop soil for selected uses and practices

Range seeding: Poor—small stones, droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, small stones, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Puffer soil for selected uses and practices

Range seeding: Poor—droughty, large stones, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Xine—VIIs, nonirrigated; Mulhop—VIIs, nonirrigated; Puffer—VIIs, nonirrigated
Range site: Xine—024X021N; Mulhop—027X075N; Puffer—024X030N
Woodland suitability group: Mulhop—3R

1500—Cortez very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

Position on landscape: Valley fans on mountains
Elevation: 5,000 to 5,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Cortez very fine sandy loam, 2 to 8 percent slopes—

Xerollic Nadurargids, fine, montmorillonitic, mesic—85 percent
Contrasting inclusions:
• Inclusion 1: Durixerollic Natrargids loam, 2 to 8 percent slopes—Durixerollic Natrargids, fine-loamy, mixed, mesic—8 percent
• Inclusion 2: Durixerollic Natrargids loam, 2 to 8 percent slopes—Durixerollic Natrargids, clayey-skeletal, montmorillonitic, mesic—5 percent
• Inclusion 3: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, mesic—2 percent

Characteristics of the Cortez Soil

Position on landscape: Valley fans on mountains
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, rabbitbrush, basin wildrye
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 8 inches—very fine sandy loam; 5 to 15 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
8 to 33 inches—clay; 15 to 25 percent pebbles (by weight); prismatic structure; hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—CH; estimated AASHTO classification—A-7
33 to 46 inches—indurated layer; massive; extremely hard, extremely firm
46 to 60 inches—very cobbly coarse sandy loam; 15 to 50 percent cobbles and stones and 40 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.5); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 22 to 36 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—very slow; below the duripan—rapid
Available water capacity: 4.7 to 5.7 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave areas on valley fans in the mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Convex foot slopes of mountains
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: Concave inset fans adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Cortez soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Cortez soil for selected uses and practices

Range seeding: Poor—excess sodium, too crusty
Daily cover for landfill: Poor—cemented pan, hard to pack
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—low strength, shrink-swell
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—hard to pack, excess salt
Drainage: Deep to water
Irrigation: Percs slowly, cemented pan, soil blowing
Terraces and diversions: Large stones, cemented pan

Interpretive Groups

Capability classification: IVe, irrigated, and VIs, nonirrigated
Range site: 024X005N

1501—Cortez-Tenabo-Beoska association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,500 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Cortez very stony loam, 2 to 8 percent slopes—Xerollic Nadurargids, fine, montmorillonitic, mesic—35 percent
• Tenabo very cobbly loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—30 percent
• Beoska very stony loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Weso very fine sandy loam, 0 to 4 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—8 percent
• Inclusion 2: Trocken Variant cobbly loam, rarely flooded, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—6 percent
• Inclusion 3: Cumulic Haplaquolls silt loam, 0 to 2 percent slopes—Cumulic Haplaquolls, fine-loamy, mixed, mesic—1 percent

Characteristics of the Cortez Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium that has a thin mantle of loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—20

Typical profile

0 to 8 inches—very stony loam; 10 to 25 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, CL-ML; estimated AASHTO classification—A-4
8 to 33 inches—clay; 15 to 25 percent pebbles (by weight); prismatic structure; hard, very firm; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CH; estimated AASHTO classification—A-7
33 to 46 inches—indurated layer; massive; extremely hard, extremely firm
46 to 60 inches—very cobbly coarse sandy loam; 15 to 50 percent cobbles and stones and 40 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.5); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GP-GM, GM, SP-SM, SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 22 to 36 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—very slow; below the duripan—rapid
Available water capacity: 4.7 to 5.7 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Moderate

Characteristics of the Tenabo Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium mantled by loess
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—35

Typical profile

0 to 5 inches—very cobbly loam; 30 to 50 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, SM; estimated AASHTO classification—A-4
5 to 17 inches—clay loam; 5 to 15 percent pebbles (by weight); prismatic structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23);

estimated Unified classification—CL; estimated AASHTO classification—A-6
17 to 24 inches—indurated layer; massive; extremely hard, extremely firm
24 to 60 inches—stratified very gravelly sandy loam to extremely gravelly loamy sand; 10 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP-GM, GM, GW-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderately slow; below the duripan—rapid
Available water capacity: 3.2 to 3.5 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.10; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—32

Typical profile

0 to 13 inches—very stony loam; 15 to 30 percent cobbles and stones and 10 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
13 to 25 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7
25 to 44 inches—stratified very gravelly very fine sandy loam to gravelly sandy loam; 0 to 10 percent cobbles and stones and 30 to 45 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2
44 to 60 inches—stratified very gravelly sandy loam to extremely gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—5; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex fan skirts adjacent to fan remnants
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush
Inclusion 2
Position on landscape: Drainageways
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 3
Position on landscape: The concave lower part of fan skirts
Distinctive present vegetation: Alkali sacaton

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Cortez soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Tenabo soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Beoska soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Cortez soil for selected uses and practices

Range seeding: Poor—excess sodium, large stones
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Moderate—cemented pan, frost action
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—area reclaim
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess sodium, excess salt

Ratings and restrictive features of the Tenabo soil for selected uses and practices

Range seeding: Poor—too arid, large stones, excess sodium
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, too sandy
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Severe—excess sodium, seepage, excess salt

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, large stones, excess salt
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, excess sodium
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt, excess sodium

Interpretive Groups

Capability classification: Cortez—VIIs, nonirrigated; Tenabo—VIIs, nonirrigated; Beoska—VIIs, nonirrigated
Range site: Cortez—024X005N; Tenabo—024X002N; Beoska—024X002N

1510—Locane-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 46 degrees F
Frost-free period: About 75 days

Composition

Major components:
• Locane cobbly loam, 50 to 75 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, montmorillonitic, frigid—60 percent
• Rock outcrop—25 percent
Contrasting inclusions:
• Inclusion 1: Bojo very cobbly loam, 30 to 50 percent slopes—Lithic Haplargids, loamy, mixed, mesic—8 percent
• Inclusion 2: Lithic Argixerolls, very cobbly loam, 50 to 75 percent slopes—Lithic Argixerolls, loamy, mixed, frigid—6 percent
• Inclusion 3: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, frigid—1 percent

Characteristics of the Locane Soil

Position on landscape: Mountains
Parent material: Kind—residuum; source—granite
Slope features: Length—long; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—55

Typical profile

0 to 2 inches—cobbly loam; 25 to 40 percent cobbles and stones and 5 to 20 percent pebbles (by weight); platy structure; slightly hard, very friable; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/

cm); nonsodic (SAR less than 13); estimated Unified classification—CL-ML, SM-SC; estimated AASHTO classification—A-4
2 to 16 inches—very gravelly clay loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); subangular blocky structure; hard, firm; mildly alkaline (pH 7.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC; estimated AASHTO classification—A-2
16 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 1.8 to 2.1 inches
Water-supplying capacity: About 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.24; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Ridgetops, mountains
Slope features: Scattered small peaks and ridges
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: South-facing foot slopes
Distinctive present vegetation: Shadscale
Inclusion 2
Position on landscape: North-facing back slopes
Distinctive present vegetation: Utah juniper, singleleaf pinyon
Inclusion 3
Position on landscape: Areas along channels
Distinctive present vegetation: Basin big sagebrush

Major Uses

Current uses: Wildlife habitat

Ratings of the Locane soil for use as woodland

Site index for common trees: Singleleaf pinyon—22; Utah juniper—22
Most important native understory plants: Basin wildrye, Nevada ephedra, bluegrass, bluebunch wheatgrass, mountain big sagebrush

Wildlife habitat elements

Suitability of the Locane soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Locane soil for selected uses and practices

Range seeding: Poor—erodes easily, small stones
Daily cover for landfill: Poor—small stones, slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Locane—VIIe, nonirrigated; Rock outcrop—VIIIs
Range site: Locane—024X049N
Woodland suitability group: Locane—3R

1530—Polum-Dekoom-Polum Variant association

Map Unit Setting

Position on landscape: Mountains
Elevation: 7,500 to 9,000 feet
Average annual precipitation: About 15 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 80 days

Composition

Major components:
• Polum gravelly silt loam, 30 to 50 percent slopes—Calcic Pachic Cryoborolls, loamy-skeletal, mixed—40 percent
• Dekoom very gravelly loam, 50 to 75 percent slopes—Cryic Rendolls, loamy-skeletal, carbonatic—30 percent
• Polum Variant extremely gravelly loam, 4 to 15 percent slopes—Calcic Cryoborolls, loamy-skeletal, mixed—15 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—9 percent
• Inclusion 2: Calcic Pachic Cryoborolls very gravelly loam, 30 to 50 percent slopes—Calcic Pachic Cryoborolls, loamy-skeletal, mixed—6 percent

Characteristics of the Polum Soil

Position on landscape: Mountains
Parent material: Kind—residuum; source—shale, limestone
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, snowberry, mountain brome, spike fescue

Typical profile

0 to 7 inches—gravelly silt loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); granular structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4
7 to 17 inches—very gravelly loam; 55 to 75 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
17 to 60 inches—very gravelly loam; 55 to 75 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 5.1 to 6.7 inches
Water-supplying capacity: About 14 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—5; wind erodibility group—5
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Dekoom Soil

Position on landscape: Mountains
Parent material: Kind—residuum; source—shale, limestone
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, spike fescue, Cusick bluegrass, lupine, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—32

Typical profile

0 to 3 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
3 to 13 inches—gravelly silt loam; 40 to 50 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-4
13 to 37 inches—very gravelly loam; 50 to 75 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
37 to 60 inches—extremely gravelly loam; 75 to 85 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 4.8 to 6.3 inches
Water-supplying capacity: About 13 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.20; T value—5; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Polum Variant Soil

Position on landscape: Crests of mountains
Parent material: Kind—residuum; source—shale, limestone
Slope features: Length—short; shape—convex
Dominant present vegetation: Low sagebrush, bottlebrush squirreltail, Sandberg bluegrass

Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—88

Typical profile

0 to 2 inches—extremely gravelly loam; 0 to 5 percent cobbles and stones and 80 to 90 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GP-GM; estimated AASHTO classification—A-1

2 to 10 inches—very gravelly silt loam; 50 to 75 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2, A-4

10 to 23 inches—very gravelly silt loam; 0 to 5 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2, A-4

23 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 20 to 30 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 1.5 to 2.6 inches
Water-supplying capacity: About 10 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.05; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Scattered small peaks and ridges
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Serviceberry, oceanspray

Major Uses

Current uses: Wildlife habitat, rangeland

Wildlife habitat elements

Suitability of the Polum soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Dekoom soil for named elements: Wild herbaceous plants (nonirrigated)—good; shrubs (nonirrigated)—good
Suitability of the Polum Variant soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Polum soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Dekoom soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, area reclaim
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Polum Variant soil for selected uses and practices

Range seeding: Poor—small stones, droughty
Daily cover for landfill: Poor—depth to bedrock, small stones
Shallow excavations: Poor—depth to bedrock
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Polum—VIIe, nonirrigated;

Dekoom—VIIs, nonirrigated; Polum Variant—VIIs, nonirrigated
Range site: Polum—024X032N; Dekoom—024X027N; Polum Variant—024X016N

1540—Dewar-Tenabo-Beoska association

Map Unit Setting

Position on landscape: Fan piedmonts
Elevation: 4,200 to 5,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Dewar gravelly silt loam, 4 to 15 percent slopes—Xerollic Durargids, loamy, mixed, mesic, shallow—35 percent
• Tenabo very fine sandy loam, 2 to 8 percent slopes—Typic Nadurargids, loamy, mixed, mesic, shallow—25 percent
• Beoska very fine sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine-loamy, mixed, mesic—25 percent
Contrasting inclusions:
• Inclusion 1: Cortez very fine sandy loam, 15 to 30 percent slopes—Xerollic Nadurargids, fine, montmorillonitic, mesic—8 percent
• Inclusion 2: Weso very fine sandy loam, 2 to 8 percent slopes—Duric Camborthids, coarse-loamy, mixed, mesic—4 percent
• Inclusion 3: Xeric Torriorthents cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent

Characteristics of the Dewar Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Wyoming big sagebrush, Sandberg bluegrass, basin wildrye
Rock fragments on the surface: Kind—gravel; percentage of surface covered—20

Typical profile

0 to 5 inches—gravelly silt loam; 0 to 5 percent cobbles and stones and 25 to 45 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL, SC; estimated AASHTO classification—A-6
5 to 17 inches—gravelly clay loam; 0 to 10 percent cobbles and stones and 20 to 40 percent pebbles (by weight); subangular blocky structure; hard, firm; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, CL; estimated AASHTO classification—A-6, A-7
17 to 40 inches—indurated duripan; thick platy structure; extremely hard, extremely firm

Soil and water features

Depth to a hardpan: 13 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—moderate
Available water capacity: 2.1 to 2.7 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Tenabo Soil

Position on landscape: Fan piedmont remnants
Parent material: Loess over mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—5

Typical profile

0 to 5 inches—very fine sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
5 to 17 inches—clay loam; 5 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL; estimated AASHTO classification—A-6
17 to 24 inches—indurated duripan; massive; extremely hard, extremely firm
24 to 60 inches—extremely gravelly loamy sand; 5 to 25 percent cobbles and stones and 45 to 65 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); nonsodic

(SAR less than 13); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 15 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the duripan—moderately slow; below the duripan—rapid
Available water capacity: 3.2 to 3.5 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.55; T value—1; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Low

Characteristics of the Beoska Soil

Position on landscape: Fan piedmont remnants
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel; percentage of surface covered—2

Typical profile

0 to 13 inches—very fine sandy loam; 5 to 25 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

13 to 25 inches—clay loam; 0 to 25 percent pebbles (by weight); prismatic structure; slightly hard, friable; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—CL; estimated AASHTO classification—A-6, A-7

25 to 44 inches—gravelly sandy loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); massive; hard, firm; strongly alkaline (pH 8.8); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM, SM; estimated AASHTO classification—A-1, A-2

44 to 60 inches—very gravelly sandy loam; 0 to 15 percent cobbles and stones and 50 to 75 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); moderately saline or strongly saline (more than 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 6.0 to 8.3 inches
Water-supplying capacity: About 7 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.49; T value—5; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Side slopes of fan piedmont remnants
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Smooth fan skirts adjacent to fan piedmonts
Distinctive present vegetation: Shadscale, bud sagebrush
Inclusion 3
Position on landscape: Concave inset fans adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Dewar soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Tenabo soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Suitability of the Beoska soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Dewar soil for selected uses and practices

Range seeding: Poor—droughty
Daily cover for landfill: Poor—cemented pan
Shallow excavations: Severe—cemented pan
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones
Pond reservoir areas: Severe—cemented pan, slope
Embankments, dikes, and levees: Severe—piping
Drainage: Deep to water
Irrigation: Cemented pan, slope, erodes easily
Terraces and diversions: Slope, cemented pan, erodes easily

Ratings and restrictive features of the Tenabo soil for selected uses and practices

Range seeding: Poor—excess sodium, too crusty, too arid
Daily cover for landfill: Poor—cemented pan, seepage, too sandy
Shallow excavations: Severe—cemented pan, cutbanks cave
Local roads and streets: Severe—cemented pan
Roadfill: Poor—cemented pan
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—cemented pan, small stones, too sandy
Pond reservoir areas: Severe—cemented pan, seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium, excess salt
Drainage: Deep to water
Irrigation: Cemented pan, erodes easily, slope
Terraces and diversions: Cemented pan

Ratings and restrictive features of the Beoska soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, excess sodium
Daily cover for landfill: Poor—small stones
Shallow excavations: Slight
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—area reclaim, small stones, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—excess salt
Drainage: Deep to water
Irrigation: Slope, excess sodium, erodes easily
Terraces and diversions: Erodes easily, soil blowing

Interpretive Groups

Capability classification: Dewar—IVe, irrigated, and VIIs, nonirrigated; Tenabo—IVe, irrigated, and VIIs, nonirrigated; Beoska—IIIe, irrigated, and VIIs, nonirrigated
Range site: Dewar—024X005N; Tenabo—024X002N; Beoska—024X002N

1550—Eastwell-Shabliss-Blackhawk association

Map Unit Setting

Position on landscape: Fan piedmont remnants
Elevation: 4,200 to 5,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Eastwell very gravelly loam, 2 to 8 percent slopes—Haploxerollic Durorthids, loamy-skeletal, mixed, mesic, shallow—35 percent
• Shabliss gravelly loam, 30 to 50 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—30 percent
• Blackhawk gravelly loam, 30 to 50 percent slopes—Entic Durorthids, loamy, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents cobbly loam, rarely flooded, 0 to 4 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), mesic—6 percent
• Inclusion 2: Haploxerollic Durorthids gravelly loam, 30 to 50 percent slopes—Haploxerollic Durorthids, loamy-skeletal, mixed, mesic—4 percent
• Inclusion 3: Haplic Nadurargids gravelly loam, 2 to 8 percent slopes—Haplic Nadurargids, loamy, mixed, mesic, shallow—4 percent
• Inclusion 4: Xerollic Haplargids gravelly loam, 30 to 50 percent slopes—Xerollic Haplargids, clayey-skeletal, mixed, mesic, shallow—1 percent

Characteristics of the Eastwell Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex

Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—42

Typical profile

0 to 6 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
6 to 12 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC, GC; estimated AASHTO classification—A-1, A-2
12 to 20 inches—cemented layer; massive; very hard, very firm
20 to 60 inches—very gravelly loam; 15 to 45 percent cobbles and stones and 40 to 55 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the cemented layer—moderate; below the cemented layer—moderately rapid
Available water capacity: 1.0 to 1.5 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Shabliss Soil

Position on landscape: North- and east-facing back slopes of partial ballenas
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—plane
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-4
3 to 19 inches—loam; 0 to 5 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
19 to 30 inches—cemented layer; massive; very hard, very firm
30 to 60 inches—very gravelly loamy sand; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—moderate; below the hardpan—rapid
Available water capacity: 3.6 to 4.6 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Blackhawk Soil

Position on landscape: South- and west-facing back slopes of partial ballenas
Parent material: Mixed alluvium influenced by loess and volcanic ash
Slope features: Length—long; shape—plane
Dominant present vegetation: Shadscale, bud sagebrush, Sandberg bluegrass

Rock fragments on the surface: Kind—gravel; percentage of surface covered—25

Typical profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 25 to 30 percent pebbles (by weight); platy structure; slightly hard, friable; mildly alkaline (pH 7.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML, SM; estimated AASHTO classification—A-4

3 to 14 inches—gravelly loam; 30 to 45 percent pebbles (by weight); subangular blocky structure; slightly hard, friable; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-4

14 to 30 inches—cemented layer; platy structure; very hard, very firm

30 to 48 inches—very gravelly fine sandy loam; 60 to 75 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GM; estimated AASHTO classification—A-1

48 to 60 inches—extremely gravelly coarse sand; 75 to 85 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—GP, GW; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the cemented layer—moderate; below the cemented layer—rapid
Available water capacity: 3.6 to 4.1 inches
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—1; wind erodibility group—6
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Inset fans adjacent to channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Inclusion 2
Position on landscape: Concave, south- and west-facing back slopes of partial ballenas and fan piedmont remnants
Distinctive present vegetation: Wyoming big sagebrush, bottlebrush squirreltail

Inclusion 3
Position on landscape: Convex crests of partial ballenas
Distinctive present vegetation: Bottlebrush squirreltail, shadscale, bud sagebrush

Inclusion 4
Position on landscape: The upper part of north- and east-facing side slopes on fan piedmont remnants and partial ballenas
Distinctive present vegetation: Wyoming big sagebrush, spiny hopsage

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Eastwell soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Shabliss soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Blackhawk soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Eastwell soil for selected uses and practices

Range seeding: Poor—too crusty, small stones, droughty
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Moderate—piping, large stones

Ratings and restrictive features of the Shabliss soil for selected uses and practices

Range seeding: Poor—droughty, too crusty, erodes easily

Daily cover for landfill: Poor—cemented pan, small stones, slope
Shallow excavations: Severe—cemented pan, cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Blackhawk soil for selected uses and practices

Range seeding: Poor—too arid, too crusty, erodes easily
Daily cover for landfill: Poor—cemented pan, small stones, slope
Shallow excavations: Severe—cemented pan, cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Probable source
Gravel: Probable source
Topsoil: Poor—small stones, slope, cemented pan
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage, excess salt

Interpretive Groups

Capability classification: Eastwell—VIIs, nonirrigated; Shabliss—VIIe, nonirrigated; Blackhawk—VIIe, nonirrigated
Range site: Eastwell—024X030N; Shabliss—024X020N; Blackhawk—024X025N

1551—Eastwell, moderately steep-Shabliss-Eastwell association

Map Unit Setting

Position on landscape: Fan piedmont remnants
Elevation: 4,500 to 6,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Eastwell very gravelly loam, 15 to 30 percent slopes—Haploxerollic Durorthids, loamy-skeletal, mixed, mesic, shallow—45 percent
• Shabliss gravelly loam, 15 to 30 percent slopes—Haploxerollic Durorthids, loamy, mixed, mesic, shallow—25 percent
• Eastwell very gravelly loam, 2 to 8 percent slopes—Haploxerollic Durorthids, loamy-skeletal, mixed, mesic, shallow—20 percent
Contrasting inclusions:
• Inclusion 1: Trunk cobbly loam, 15 to 30 percent slopes—Xerollic Haplargids, fine, montmorillonitic, mesic—9 percent
• Inclusion 2: Fluventic Haploxerolls loam, 0 to 4 percent slopes—Fluventic Haploxerolls, fine-loamy, mixed, mesic—1 percent

Characteristics of the Moderately Steep Eastwell Soil

Position on landscape: South-facing side slopes of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—long; shape—plane
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—42

Typical profile

0 to 6 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
6 to 12 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC, GC; estimated AASHTO classification—A-1, A-2
12 to 20 inches—cemented layer; massive; very hard, very firm
20 to 60 inches—very gravelly loam; 15 to 45 percent cobbles and stones and 40 to 55 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches

Flooding: None
Permeability: Above the cemented layer—moderate; below the cemented layer—moderately rapid
Available water capacity: 1.0 to 1.5 inches
Water-supplying capacity: About 8 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Shabliss Soil

Position on landscape: North-facing fan remnants
Parent material: Loess high in content of volcanic ash over mixed alluvium
Slope features: Length—long; shape—plane
Dominant present vegetation: Wyoming big sagebrush, spiny hopsage, bottlebrush squirreltail
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-4
3 to 19 inches—loam; 0 to 10 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
19 to 30 inches—strongly cemented hardpan; massive; very hard, very firm
30 to 60 inches—very gravelly loamy sand; 0 to 15 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.8); slightly saline (4 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a hardpan: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the hardpan—moderate; below the hardpan—rapid
Available water capacity: 3.6 to 4.6 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.28; T value—2; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Less Sloping Eastwell Soil

Position on landscape: Summits of fan piedmont remnants
Parent material: Mixed alluvium influenced by loess
Slope features: Length—short; shape—convex
Dominant present vegetation: Black sagebrush, Sandberg bluegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—42

Typical profile

0 to 6 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
6 to 12 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC, GC; estimated AASHTO classification—A-1, A-2
12 to 20 inches—cemented layer; massive; very hard, very firm
20 to 60 inches or more—very gravelly loam; 15 to 45 percent cobbles and stones and 40 to 55 percent pebbles (by weight); massive; soft, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-2, A-4

Soil and water features

Depth to a hardpan: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Above the cemented layer—moderate; below the cemented layer—moderately rapid
Available water capacity: 1.0 to 1.5 inches

Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—2; wind erodibility group—7
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Residual hills protruding through the fan piedmonts
Distinctive present vegetation: Thurber needlegrass, Wyoming big sagebrush
Inclusion 2
Position on landscape: Inset fans adjacent to stream channels
Distinctive present vegetation: Basin wildrye, basin big sagebrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the moderately steep Eastwell soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Shabliss soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the less sloping Eastwell soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the moderately steep Eastwell soil for selected uses and practices

Range seeding: Poor—too crusty, small stones, droughty
Daily cover for landfill: Poor—cemented pan, slope, small stones
Shallow excavations: Severe—cemented pan, slope
Local roads and streets: Severe—slope
Roadfill: Fair—large stones, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Moderate—piping, large stones

Ratings and restrictive features of the Shabliss soil for selected uses and practices

Range seeding: Poor—too crusty, droughty
Daily cover for landfill: Poor—cemented pan, small stones, slope
Shallow excavations: Severe—cemented pan, cutbanks cave, slope
Local roads and streets: Severe—slope
Roadfill: Fair—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan, slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the less sloping Eastwell soil for selected uses and practices

Range seeding: Poor—too crusty, small stones, droughty
Daily cover for landfill: Poor—cemented pan, small stones
Shallow excavations: Severe—cemented pan
Local roads and streets: Moderate—cemented pan, large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—cemented pan, small stones, area reclaim
Pond reservoir areas: Severe—seepage, cemented pan
Embankments, dikes, and levees: Moderate—piping, large stones

Interpretive Groups

Capability classification: Eastwell, moderately steep—VIIe, nonirrigated; Shabliss—VIIe, nonirrigated; the less sloping Eastwell—VIIs, nonirrigated
Range site: Eastwell, moderately steep—024X030N; Shabliss—024X020N; the less sloping Eastwell—024X030N

1560—Denay-Wereld-Xine association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 85 days

Composition

Major components:
- Denay gravelly loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—40 percent
- Wereld very gravelly silt loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—25 percent
- Xine very gravelly loam, 30 to 50 percent slopes—Aridic Calcixerolls, loamy-skeletal, mixed, frigid—20 percent

Contrasting inclusions:
- Inclusion 1: Mulhop very gravelly loam, 30 to 50 percent slopes—Lithic Xerollic Calciorthids, loamy-skeletal, mixed, frigid—5 percent
- Inclusion 2: Rock outcrop—5 percent
- Inclusion 3: Cleavage extremely gravelly loam, 4 to 30 percent slopes—Lithic Argixerolls, loamy-skeletal, mixed, frigid—4 percent
- Inclusion 4: Aridic Haploxerolls very gravelly loam, 30 to 50 percent slopes—Aridic Haploxerolls, loamy-skeletal, mixed, frigid—1 percent

Characteristics of the Denay Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum influenced by loess; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Mountain big sagebrush, basin wildrye, rabbitbrush
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 10 inches—gravelly loam; 0 to 5 percent cobbles and stones and 30 to 50 percent pebbles (by weight); granular structure; soft, very friable; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-4
10 to 44 inches—extremely gravelly loam; 0 to 5 percent cobbles and stones and 75 to 85 percent pebbles (by weight); massive; hard, firm; mildly alkaline (pH 7.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1
44 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 4.5 to 5.4 inches
Water-supplying capacity: About 12 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—3; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Wereld Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—convex
Dominant present vegetation: Black sagebrush, Cusick bluegrass, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—47

Typical profile

0 to 3 inches—very gravelly silt loam; 0 to 10 percent cobbles and stones and 50 to 65 percent pebbles (by weight); granular structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-2, A-4
3 to 10 inches—gravelly silt loam; 25 to 45 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM, ML; estimated AASHTO classification—A-4
10 to 25 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 55 to 70 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2, A-4
25 to 42 inches—very gravelly loam; 0 to 15 percent cobbles and stones and 65 to 75 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2

42 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 40 to 60 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 2.8 to 3.9 inches
Water-supplying capacity: About 13 inches
Runoff: Rapid
Hydrologic group: B
Erosion factors (surface layer): K value—.17; T value—3; wind erodibility group—8
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Characteristics of the Xine Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—limestone, shale
Slope features: Length—long; shape—concave
Dominant present vegetation: Mountain big sagebrush, bluebunch wheatgrass, Idaho fescue
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—50

Typical profile

0 to 10 inches—very gravelly loam; 0 to 5 percent cobbles and stones and 50 to 70 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
10 to 38 inches—very cobbly loam; 35 to 50 percent cobbles and stones and 35 to 60 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4, A-1
38 inches—weathered bedrock

Soil and water features

Depth to bedrock: 20 to 40 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 3.0 to 4.1 inches
Water-supplying capacity: About 11 inches
Runoff: Medium
Hydrologic group: C
Erosion factors (surface layer): K value—.10; T value—2; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: The upper part of side slopes on mountains
Distinctive present vegetation: Utah juniper
Inclusion 2
Position on landscape: Scattered small peaks and ridges
Distinctive present vegetation: Barren
Inclusion 3
Position on landscape: Crests and shoulder slopes of mountains
Distinctive present vegetation: Idaho fescue, low sagebrush
Inclusion 4
Position on landscape: The lower part of mountain crests
Distinctive present vegetation: Curlleaf mountainmahogany
Other minor inclusions
• Areas on toe slopes adjacent to channels on mountains
• Areas on concave, north-facing side slopes of mountains

Major Uses

Current uses: Wildlife habitat, rangeland

Wildlife habitat elements

Suitability of the Denay soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Wereld soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Xine soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Denay soil for selected uses and practices

Range seeding: Poor—erodes easily
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Wereld soil for selected uses and practices

Range seeding: Poor—erodes easily, small stones
Daily cover for landfill: Poor—small stones, slope
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim, slope
Pond reservoir areas: Severe—slope
Embankments, dikes, and levees: Severe—seepage

Ratings and restrictive features of the Xine soil for selected uses and practices

Range seeding: Poor—small stones
Daily cover for landfill: Poor—large stones, slope, depth to bedrock
Shallow excavations: Severe—slope
Local roads and streets: Severe—slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Interpretive Groups

Capability classification: Denay—VIIe, nonirrigated; Wereld—VIIs, nonirrigated; Xine—VIIs, nonirrigated
Range site: Denay—024X029N; Wereld—024X042N; Xine—024X021N

1570—Pocker Variant loam, wet

Map Unit Setting

Position on landscape: Flood plains
Elevation: 3,700 to 4,200 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major component:
• Pocker Variant loam, wet, 0 to 2 percent slopes—Aquic Xerofluvents, coarse-silty, mixed (calcareous), mesic—85 percent

Contrasting inclusions:
• Inclusion 1: Xeric Torriorthents loam, 30 to 50 percent slopes—Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 2: Xeric Torrifluvents silt loam, 0 to 2 percent slopes—Xeric Torrifluvents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Typic Torrifluvents sandy loam, 0 to 2 percent slopes—Typic Torrifluvents, sandy, mixed, mesic—3 percent
• Inclusion 4: Typic Torrifluvents silt loam, 0 to 2 percent slopes—Typic Torrifluvents, fine-loamy, mixed (calcareous), mesic—2 percent

Characteristics of the Pocker Variant Soil

Position on landscape: Flood plains
Parent material: Mixed alluvium
Slope features: Length—long; shape—smooth
Dominant present vegetation: Basin big sagebrush, inland saltgrass, willow

Typical profile

0 to 2 inches—loam; 0 to 10 percent pebbles (by weight); massive; soft, very friable; moderately alkaline (pH 8.0); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4
2 to 60 inches—stratified silt loam to very fine sandy loam; 0 to 10 percent pebbles (by weight); massive; slightly hard, friable; moderately alkaline (pH 8.2); nonsaline (2 to 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table (artificially lowered): 18 to 24 inches
Flooding: None
Permeability: Moderate
Available water capacity: 10.8 to 11.9 inches
Water-supplying capacity: About 16 inches
Runoff: Slow
Hydrologic group: C
Erosion factors (surface layer): K value—.55; T value—5; wind erodibility group—4L
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: High

Contrasting Inclusions

Inclusion 1
Position on landscape: Escarpments adjacent to flood plains

Distinctive present vegetation: Quaking aspen
Inclusion 2
Position on landscape: Stream terraces
Distinctive present vegetation: Black greasewood
Inclusion 3
Position on landscape: Concave inset fans
Distinctive present vegetation: Littleleaf horsebrush, rubber rabbitbrush
Inclusion 4
Position on landscape: Edges of active flood plains
Distinctive present vegetation: Torrey quailbush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Pocker Variant soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Pocker Variant soil for selected uses and practices

Range seeding: Good
Daily cover for landfill: Fair—wetness
Shallow excavations: Severe—wetness
Local roads and streets: Severe—frost action
Roadfill: Fair—wetness
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Good
Pond reservoir areas: Moderate—seepage
Embankments, dikes, and levees: Severe—piping, wetness
Drainage: Frost action
Irrigation: Erodes easily, wetness
Terraces and diversions: Erodes easily, wetness

Interpretive Groups

Capability classification: IIIw, irrigated, and VIw, nonirrigated
Range site: 025X001N

1640—Isolde-Parran-Appian association

Map Unit Setting

Position on landscape: Lake plains, sand dunes
Elevation: 3,900 to 4,000 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Isolde fine sand, 4 to 15 percent slopes—Typic Torripsamments, mixed, mesic—45 percent
• Parran silty clay, 0 to 2 percent slopes—Typic Salorthids, fine, montmorillonitic, mesic—20 percent
• Appian sandy loam, moderately saline-sodic, 0 to 2 percent slopes—Typic Natrargids, fine-loamy over sandy or sandy-skeletal, mixed, mesic—20 percent
Contrasting inclusions:
• Inclusion 1: Playas—5 percent
• Inclusion 2: Typic Torriorthents fine sandy loam, 4 to 30 percent slopes—Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic—5 percent
• Inclusion 3: Hawsley sand, 2 to 8 percent slopes—Typic Torripsamments, mixed, mesic—3 percent
• Inclusion 4: Trocken fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—2 percent

Characteristics of the Isolde Soil

Position on landscape: Sand dunes
Parent material: Sandy eolian material
Slope features: Length—short; shape—convex
Dominant present vegetation: Black greasewood, hairy horsebrush, Indian ricegrass

Typical profile

0 to 1 inch—fine sand; single grain; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-3
1 to 60 inches—fine sand; single grain; loose; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-3

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very rapid
Available water capacity: 3.6 to 5.4 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: A
Erosion factors (surface layer): K value—.28; T value—5; wind erodibility group—1
Hazard of erosion: By water—slight; by wind—severe
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Parran Soil

Position on landscape: Interdune lake plain terraces
Parent material: Mixed lacustrine sediments
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, seepweed
Rock fragments on the surface: Kind—gravel; percentage of surface covered—1

Typical profile

0 to 7 inches—silty clay; platy structure; hard, firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CH, CL; estimated AASHTO classification—A-7
7 to 26 inches—silty clay; massive; soft, very friable; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CH, CL; estimated AASHTO classification—A-7
26 to 60 inches—silty clay; massive; very hard, firm; strongly alkaline (pH 8.8); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—CH, CL; estimated AASHTO classification—A-7

Soil and water features

Depth to a seasonal high water table: November through March—30 to 42 inches; rest of year—more than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 8.4 to 9.6 inches
Water-supplying capacity: About 10 inches
Runoff: Ponded
Hydrologic group: D
Erosion factors (surface layer): K value—.37; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: High

Characteristics of the Appian Soil

Position on landscape: Lake plain terraces
Parent material: Mixed alluvium over sandy lacustrine deposits
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Black greasewood, seepweed
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 4 inches—sandy loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); moderately saline (8 to 16 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-2, A-4
4 to 9 inches—sandy clay loam; 0 to 10 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.4); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—SC, CL; estimated AASHTO classification—A-6, A-7
9 to 25 inches—stratified sandy loam to sand; 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); strongly saline (more than 16 mmhos/cm); strongly sodic (SAR more than 46); estimated Unified classification—SM; estimated AASHTO classification—A-2
25 to 56 inches—sand; 10 to 25 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 9.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-1
56 to 60 inches—silt loam; massive; slightly hard, friable; strongly alkaline (pH 8.8); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL, ML; estimated AASHTO classification—A-4

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.6 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.24; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—moderate
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1

Position on landscape: Depressions on the lower lake plains
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Convex parna dunes
Distinctive present vegetation: Black greasewood
Inclusion 3
Position on landscape: Smooth beach plains
Distinctive present vegetation: Fourwing saltbush, Bailey greasewood
Inclusion 4
Position on landscape: Convex offshore bars
Distinctive present vegetation: Bluegrass, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Isolde soil for named elements: Grain and seed crops (irrigated)—poor; domestic grasses and legumes (irrigated)—poor; wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Parran soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Appian soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Isolde soil for selected uses and practices

Range seeding: Poor—too arid, soil blowing
Daily cover for landfill: Poor—seepage, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—slope
Roadfill: Good
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—too sandy
Pond reservoir areas: Severe—seepage, slope
Embankments, dikes, and levees: Severe—seepage, piping
Drainage: Deep to water
Irrigation: Droughty, fast intake, soil blowing
Terraces and diversions: Slope, droughty, soil blowing

Ratings and restrictive features of the Parran soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—hard to pack
Shallow excavations: Moderate—too clayey, wetness
Local roads and streets: Severe—low strength, frost action, shrink-swell
Roadfill: Poor—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—too clayey, excess salt
Pond reservoir areas: Slight
Embankments, dikes, and levees: Severe—excess salt

Ratings and restrictive features of the Appian soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—thin layer
Gravel: Improbable source—too sandy
Topsoil: Poor—excess salt, excess sodium, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium

Interpretive Groups

Capability classification: Isolde—IVs, irrigated, and VIIs, nonirrigated; Parran—VIIw, nonirrigated; Appian—VIIw, nonirrigated
Range site: Isolde—027X016N; Parran—027X025N; Appian—027X024N

1650—Bango-Appian association

Map Unit Setting

Position on landscape: Lake plain terraces
Elevation: 3,900 to 4,100 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 52 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Bango very gravelly loamy sand, 2 to 8 percent slopes—Haplic Natrargids, fine-loamy, mixed, mesic—50 percent
• Appian loam, 0 to 2 percent slopes—Typic Natrargids, fine-loamy over sandy or sandy-skeletal, mixed, mesic—35 percent
Contrasting inclusions:
• Inclusion 1: Badland—5 percent
• Inclusion 2: Biddleman gravelly sandy loam, 4 to 15 percent slopes—Typic Natrargids, fine-loamy over sandy or sandy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Trocken very cobbly sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—3 percent
• Inclusion 4: Lithic Torriorthents very gravelly sandy loam, 4 to 15 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—2 percent

Characteristics of the Bango Soil

Position on landscape: Low-lying lake plain terraces
Parent material: Mixed lacustrine sediments
Slope features: Length—long; shape—smooth
Dominant present vegetation: Bailey greasewood, shadscale, bud sagebrush, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—45

Typical profile

0 to 5 inches—very gravelly loamy sand; 0 to 5 percent cobbles and stones and 50 to 65 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—GP-GM, GM; estimated AASHTO classification—A-1
5 to 9 inches—loam; 0 to 5 percent cobbles and stones and 0 to 10 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 8.2); slightly saline (4 to 8 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—CL; estimated AASHTO classification—A-6
9 to 60 inches—stratified gravelly fine sandy loam to silt loam; 0 to 5 percent cobbles and stones and 5 to 15 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); slightly saline (4 to 8 mmhos/cm); slightly sodic or moderately sodic (SAR 13 to 45); estimated Unified classification—CL; estimated AASHTO classification—A-6

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 8.4 to 9.2 inches
Water-supplying capacity: About 4 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.10; T value—5; wind erodibility group—5
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Appian Soil

Position on landscape: Lake plain terraces
Parent material: Mixed alluvium over sandy lacustrine deposits
Slope features: Length—long; shape—concave
Dominant present vegetation: Bailey greasewood, shadscale, bud sagebrush
Rock fragments on the surface: Kind—gravel; percentage of surface covered—5

Typical profile

0 to 4 inches—loam; 0 to 10 percent pebbles (by weight); platy structure; soft, very friable; strongly alkaline (pH 8.6); nonsaline (2 to 4 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CL-ML; estimated AASHTO classification—A-4
4 to 9 inches—sandy clay loam; 0 to 10 percent pebbles (by weight); prismatic structure; hard, firm; very strongly alkaline (pH 9.4); slightly saline (4 to 8 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SC, CL; estimated AASHTO classification—A-6, A-7
9 to 25 inches—stratified sandy loam to sand; 10 to 25 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2
25 to 60 inches—sand; 10 to 25 percent pebbles (by weight); single grain; loose; strongly alkaline (pH 9.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SP, SP-SM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 4.0 to 5.6 inches
Water-supplying capacity: About 4 inches
Runoff: Very slow
Hydrologic group: B
Erosion factors (surface layer): K value—.37; T value—2; wind erodibility group—3
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Deeply dissected lake plain terrace breaks
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: Convex, highly dissected lake plain terrace breaks

Distinctive present vegetation: Black greasewood, seepweed
Inclusion 3
Position on landscape: Concave inset fans adjacent to channels
Distinctive present vegetation: Seepweed
Inclusion 4
Position on landscape: The upper part of lake plain terraces
Distinctive present vegetation: Indian ricegrass, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Bango soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Appian soil for named elements: Grain and seed crops (irrigated)—fair; domestic grasses and legumes (irrigated)—fair; wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Bango soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Good
Shallow excavations: Slight
Local roads and streets: Moderate—low strength, shrink-swell
Roadfill: Fair—low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—excess sodium
Pond reservoir areas: Moderate—slope
Embankments, dikes, and levees: Severe—excess sodium

Ratings and restrictive features of the Appian soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, too sandy
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Probable source
Gravel: Improbable source—too sandy
Topsoil: Poor—excess salt, excess sodium, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium
Drainage: Deep to water
Irrigation: Droughty, excess sodium
Terraces and diversions: Erodes easily, too sandy

Interpretive Groups

Capability classification: Bango—VIIs, nonirrigated; Appian—IIIs, irrigated, and VIIs, nonirrigated
Range site: Bango—027X018N; Appian—027X018N

1660—Biddleman-Trocken-Biddleman, stony, association

Map Unit Setting

Position on landscape: Beach plains, fan skirts
Elevation: 4,000 to 4,300 feet
Average annual precipitation: About 6 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 120 days

Composition

Major components:
• Biddleman gravelly sandy loam, 2 to 4 percent slopes—Typic Natrargids, fine-loamy over sandy or sandy-skeletal, mixed, mesic—35 percent
• Trocken gravelly very fine sandy loam, 2 to 8 percent slopes—Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—35 percent
• Biddleman very stony sandy loam, 2 to 8 percent slopes—Typic Natrargids, fine-loamy over sandy or sandy-skeletal, mixed, mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Bluewing very cobbly loamy sand, frequently flooded, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—9 percent
• Inclusion 2: Chilper gravelly sandy loam, 2 to 8 percent slopes—Duric Natrargids, fine, montmorillonitic, mesic—4 percent
• Inclusion 3: Rock outcrop—2 percent

Characteristics of the Gravelly Biddleman Soil

Position on landscape: The lower part of beach terraces adjacent to escarpments
Parent material: Loamy alluvium over lacustrine material
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Black greasewood
Rock fragments on the surface: Kind—gravel; percentage of surface covered—20

Typical profile

0 to 3 inches—gravelly sandy loam; 5 to 10 percent cobbles and stones and 30 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); strongly saline (more than 16 mmhos/cm); moderately sodic (SAR

24 to 46); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

3 to 13 inches—gravelly loam; 0 to 5 percent cobbles and stones and 35 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); slightly saline or moderately saline (4 to 16 mmhos/cm); moderately sodic (SAR 24 to 46); estimated Unified classification—SC, GC; estimated AASHTO classification—A-2, A-6

13 to 60 inches—stratified extremely gravelly loamy fine sand to coarse sand; 5 to 15 percent cobbles and stones and 80 to 90 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—GP; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: About 6 inches
Runoff: Slow
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Trocken Soil

Position on landscape: Fan skirts, offshore bars
Parent material: Mixed alluvium
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, bud sagebrush, pine bluegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—30

Typical profile

0 to 3 inches—gravelly very fine sandy loam; 0 to 15 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, SM; estimated AASHTO classification—A-2, A-4

3 to 60 inches—stratified extremely gravelly loamy coarse sand to very cobbly loam; 5 to 40 percent cobbles and stones and 60 to 85 percent pebbles (by weight); massive; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM-GC, GP-GC; estimated AASHTO classification—A-2

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 3.0 to 4.8 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—5; wind erodibility group—4
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Characteristics of the Stony Biddleman Soil

Position on landscape: The upper part of beach terraces
Parent material: Loamy alluvium over lacustrine material
Slope features: Length—long; shape—convex
Dominant present vegetation: Bailey greasewood, shadscale, bud sagebrush, seepweed
Rock fragments on the surface: Kind—gravel, stones; percentage of surface covered—22

Typical profile

0 to 3 inches—very stony sandy loam; 15 to 30 percent cobbles and stones and 30 to 40 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2

3 to 13 inches—gravelly loam; 0 to 5 percent cobbles and stones and 35 to 45 percent pebbles (by weight); prismatic structure; hard, firm; strongly alkaline (pH 9.0); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—SC, GC; estimated AASHTO classification—A-2, A-6

13 to 60 inches—stratified extremely gravelly loamy fine sand to coarse sand; 5 to 15 percent cobbles and stones and 80 to 90 percent pebbles (by weight); massive; slightly hard, friable; strongly alkaline (pH 9.0); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GP, GP-GM; estimated AASHTO classification—A-1

Soil and water features

Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.9 to 4.1 inches
Water-supplying capacity: About 6 inches
Runoff: Medium
Hydrologic group: B
Erosion factors (surface layer): K value—.32; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Drainageways
Distinctive present vegetation: Nevada ephedra
Inclusion 2
Position on landscape: Convex fan piedmont remnants adjacent to beach plains
Distinctive present vegetation: Bluegrass, shadscale
Inclusion 3
Position on landscape: Escarpments
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the gravelly Biddleman soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Trocken soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the stony Biddleman soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the gravelly Biddleman soil for selected uses and practices

Range seeding: Poor—too arid, excess salt, excess sodium
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess salt
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess salt, excess sodium

Ratings and restrictive features of the Trocken soil for selected uses and practices

Range seeding: Poor—too arid, too crusty
Daily cover for landfill: Poor—small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Moderate—large stones
Roadfill: Fair—large stones
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, area reclaim
Pond reservoir areas: Moderate—seepage, slope
Embankments, dikes, and levees: Severe—large stones

Ratings and restrictive features of the stony Biddleman soil for selected uses and practices

Range seeding: Poor—too arid, large stones, excess salt
Daily cover for landfill: Poor—seepage, too sandy, small stones
Shallow excavations: Severe—cutbanks cave
Local roads and streets: Slight
Roadfill: Good
Sand: Improbable source—small stones
Gravel: Probable source
Topsoil: Poor—small stones, area reclaim, excess sodium, too sandy
Pond reservoir areas: Severe—seepage
Embankments, dikes, and levees: Severe—seepage, excess sodium

Interpretive Groups

Capability classification: Biddleman, gravelly—VIIs, nonirrigated; Trocken—VIIs, nonirrigated; Biddleman, stony—VIIs, nonirrigated
Range site: Biddleman, gravelly—027X025N; Trocken—027X028N; Biddleman, stony—027X030N

3000—Jobpeak-Teguro-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 6,000 to 7,500 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 46 degrees F
Frost-free period: About 90 days

Composition

Major components:
• Jobpeak very gravelly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed, nonacid, mesic—40 percent
• Teguro very stony loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy, mixed, frigid—30 percent
• Rock outcrop—15 percent
Contrasting inclusions:
• Inclusion 1: Singatse very gravelly loam, 30 to 50 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—5 percent
• Inclusion 2: Pachic Argixerolls very stony loam, 15 to 30 percent slopes—Pachic Argixerolls, loamy-skeletal, mixed, frigid—5 percent
• Inclusion 3: Lithic Xerollic Haplargids very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, mixed, frigid—5 percent

Characteristics of the Jobpeak Soil

Position on landscape: South- and west-facing side slopes of mountains
Parent material: Kind—residuum; source—basalt
Slope features: Length—long; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—70

Typical profile

0 to 5 inches—very gravelly loam; 15 to 30 percent cobbles and stones and 40 to 65 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
5 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 12 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.3 to 0.5 inch
Water-supplying capacity: About 9 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Teguro Soil

Position on landscape: North- and east-facing side slopes of mountains
Parent material: Kind—residuum; source—rhyolitic tuff
Slope features: Length—long; shape—convex
Dominant present vegetation: Singleleaf pinyon, Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles, stones

Typical profile

0 to 2 inches—very stony loam; 10 to 25 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-4
2 to 19 inches—gravelly loam; 0 to 10 percent cobbles and stones and 25 to 50 percent pebbles (by weight); angular blocky structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SC; estimated AASHTO classification—A-2, A-6
19 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 14 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately slow
Available water capacity: 2.5 to 3.1 inches
Water-supplying capacity: About 10 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Moderate
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: The crests and upper side slopes of mountains
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex, south-facing foot slopes of mountains

Distinctive present vegetation: Bailey greasewood, shadscale

Inclusion 2

Position on landscape: Concave, north-facing side slopes of mountains

Distinctive present vegetation: Mountain big sagebrush

Inclusion 3

Position on landscape: Convex crests of mountains

Distinctive present vegetation: Singleleaf pinyon, Utah juniper

Major Uses

Current uses: Rangeland, wildlife habitat, woodland

Ratings of the Jobpeak soil for use as woodland

Site index for common trees: Singleleaf pinyon—25; Utah juniper—25

Most important native understory plants: Mountain big sagebrush, Sandberg bluegrass

Ratings of the Teguro soil for use as woodland

Site index for common trees: Singleleaf pinyon—55; Utah juniper—55

Most important native understory plants: Mountain big sagebrush, Sandberg bluegrass

Wildlife habitat elements

Suitability of the Jobpeak soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Suitability of the Teguro soil for named elements: Wild herbaceous plants (nonirrigated)—fair; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Jobpeak soil for selected uses and practices

Range seeding: Poor—droughty, small stones, depth to bedrock

Daily cover for landfill: Poor—depth to bedrock, slope

Shallow excavations: Severe—depth to bedrock, slope

Local roads and streets: Severe—depth to bedrock, slope

Roadfill: Poor—depth to bedrock, slope

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—depth to bedrock, small stones, slope

Pond reservoir areas: Severe—depth to bedrock, slope

Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Teguro soil for selected uses and practices

Range seeding: Poor—small stones, erodes easily

Daily cover for landfill: Poor—depth to bedrock, small stones, slope

Shallow excavations: Severe—depth to bedrock, slope

Local roads and streets: Severe—depth to bedrock, slope

Roadfill: Poor—depth to bedrock, slope

Sand: Improbable source—excess fines

Gravel: Improbable source—excess fines

Topsoil: Poor—depth to bedrock, small stones, slope

Pond reservoir areas: Severe—depth to bedrock, slope

Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Jobpeak—VIIs, nonirrigated; Teguro—VIIs, nonirrigated; Rock outcrop—VIIIs

Range site: Jobpeak—024X049N; Teguro—024X049N

Woodland suitability group: Jobpeak—3R; Teguro—2R

3010—Bedwyr-Bedzee-Jobpeak association

Map Unit Setting

Position on landscape: Mountains

Elevation: 5,200 to 6,300 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 51 degrees F

Frost-free period: About 110 days

Composition

Major components:

- Bedwyr stony loam, 15 to 30 percent slopes—Typic Natrargids, clayey, montmorillonitic, mesic, shallow—50 percent
- Bedzee very stony loam, 15 to 30 percent slopes—Xerollic Haplargids, clayey, montmorillonitic, mesic, shallow—20 percent
- Jobpeak very gravelly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed, nonacid, mesic—15 percent

Contrasting inclusions:

- Inclusion 1: Lithic Xerollic Haplargids very stony loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey, montmorillonitic, mesic, shallow—8 percent
- Inclusion 2: Rock outcrop—7 percent

Characteristics of the Bedwyr Soil

Position on landscape: Foot slopes and side slopes of mountains

Parent material: Kind—residuum; source—consolidated clayey lacustrine sediments that have a thin mantle of loess

Slope features: Length—long; shape—convex

Dominant present vegetation: Shadscale, bud sagebrush, pine bluegrass

Typical profile

0 to 3 inches—stony loam; 10 to 25 percent cobbles and stones and 25 to 40 percent pebbles (by weight); platy structure; slightly hard, friable; very strongly alkaline (pH 9.4); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6

3 to 15 inches—clay; 0 to 10 percent pebbles (by weight); prismatic structure; very hard, firm; very strongly alkaline (pH 9.4); nonsaline or slightly saline (2 to 8 mmhos/cm); slightly sodic (SAR 13 to 23); estimated Unified classification—CH; estimated AASHTO classification—A-7

15 inches—weathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.0 to 2.4 inches
Water-supplying capacity: About 5 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—6
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—high
Potential for frost action: Moderate

Characteristics of the Bedzee Soil

Position on landscape: The upper side slopes of mountains
Parent material: Kind—residuum; source—sedimentary rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, pine bluegrass

Typical profile

0 to 4 inches—very stony loam; 10 to 15 percent cobbles and stones and 0 to 10 percent pebbles (by weight); subangular blocky structure; soft, very friable; moderately alkaline (pH 7.9); nonsaline (less than 4 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CL; estimated AASHTO classification—A-6

4 to 10 inches—gravelly clay; 0 to 5 percent cobbles and stones and 25 to 50 percent pebbles (by weight); prismatic structure; hard, friable; moderately alkaline (pH 8.2); slightly saline (4 to 8 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH, SC, GC; estimated AASHTO classification—A-7

10 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 1.3 to 1.5 inches
Water-supplying capacity: About 5 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.43; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—moderate
Potential for frost action: Moderate

Characteristics of the Jobpeak Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—basalt
Slope features: Length—long; shape—concave
Dominant present vegetation: Singleleaf pinyon, Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—70

Typical profile

0 to 5 inches—very gravelly loam; 15 to 30 percent cobbles and stones and 40 to 65 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4

5 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 12 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.3 to 0.5 inch
Water-supplying capacity: About 8 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low

Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Contrasting Inclusions

Inclusion 1
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Pine bluegrass, low sagebrush
Inclusion 2
Position on landscape: The crests and upper side slopes of mountains
Distinctive present vegetation: Barren

Major Uses

Current uses: Rangeland, wildlife habitat

Ratings of the Jobpeak soil for use as woodland

Site index for common trees: Singleleaf pinyon—25; Utah juniper—25
Most important native understory plants: Mountain big sagebrush, basin wildrye, Sandberg bluegrass

Wildlife habitat elements

Suitability of the Bedwyr soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor
Suitability of the Bedzee soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the Jobpeak soil for named elements: Wild herbaceous plants (nonirrigated)—poor; coniferous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the Bedwyr soil for selected uses and practices

Range seeding: Poor—too arid, droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, hard to pack, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—excess sodium, depth to bedrock

Ratings and restrictive features of the Bedzee soil for selected uses and practices

Range seeding: Poor—droughty, excess salt, too arid
Daily cover for landfill: Poor—depth to bedrock, slope, hard to pack
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—low strength, slope, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Jobpeak soil for selected uses and practices

Range seeding: Poor—droughty, small stones, depth to bedrock
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Bedwyr—VIIe, nonirrigated; Bedzee—VIIe, nonirrigated; Jobpeak—VIIs, nonirrigated
Range site: Bedwyr—027X028N; Bedzee—027X020N; Jobpeak—024X049N
Woodland suitability group: Jobpeak—3R

3020—Uripnes-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 5,800 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 105 days

Composition

Major components:
• Uripnes very stony sandy loam, 15 to 30 percent slopes—Typic Torriorthents, loamy-skeletal, mixed, nonacid, mesic, shallow—55 percent
• Rock outcrop—30 percent
Contrasting inclusions:
• Inclusion 1: Jobpeak very gravelly loam, 50 to 75

percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed, nonacid, mesic—7 percent
• Inclusion 2: Xeric Torriorthents very stony sandy loam, 15 to 30 percent slopes—Xeric Torriorthents, loamy, mixed, nonacid, mesic—6 percent
• Inclusion 3: Xeric Torriorthents very cobbly sandy loam, 2 to 8 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed, nonacid, mesic—2 percent

Characteristics of the Uripnes Soil

Position on landscape: Mountains
Parent material: Kind—residuum; source—granodiorite
Slope features: Length—long; shape—convex
Dominant present vegetation: Desert needlegrass, Indian ricegrass, littleleaf horsebrush
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—58

Typical profile

0 to 6 inches—very stony sandy loam; 20 to 35 percent cobbles and stones and 50 to 75 percent pebbles (by weight); platy structure; slightly hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1
6 to 22 inches—weathered bedrock
22 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 3 to 8 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderately rapid
Available water capacity: 0.3 to 0.4 inch
Water-supplying capacity: About 6 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Singleleaf pinyon, Utah juniper

Inclusion 2
Position on landscape: Convex side slopes of mountains
Distinctive present vegetation: Pine bluegrass, Wyoming big sagebrush

Inclusion 3
Position on landscape: Channels
Distinctive present vegetation: Sandberg bluegrass, rubber rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the Uripnes soil for named elements: Wild herbaceous plants (nonirrigated)—very poor; shrubs (nonirrigated)—very poor

Ratings and restrictive features of the Uripnes soil for selected uses and practices

Range seeding: Poor—depth to bedrock, large stones, too arid
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—slope
Roadfill: Poor—depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—depth to bedrock, thin layer

Interpretive Groups

Capability classification: Uripnes—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Uripnes—027X017N

3030—Singatse, very steep-Rock outcrop-Singatse association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 6,500 feet
Average annual precipitation: About 5 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Singatse very gravelly loam, 50 to 75 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—40 percent

• Rock outcrop—30 percent
• Singatse very gravelly loam, 30 to 50 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—15 percent
Contrasting inclusions:
• Inclusion 1: Jobpeak very gravelly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed, nonacid, mesic—6 percent
• Inclusion 2: Theon very gravelly loam, 15 to 30 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—5 percent
• Inclusion 3: Lithic Xerollic Haplargids very gravelly loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey-skeletal, mixed, mesic—2 percent
• Inclusion 4: Bluewing extremely gravelly loamy sand, frequently flooded, 2 to 8 percent slopes—Typic Torriorthents, sandy-skeletal, mixed, mesic—2 percent

Characteristics of the Very Steep Singatse Soil

Position on landscape: North-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, rhyolite, and, in some areas, granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, bud sagebrush, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—35

Typical profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 45 to 55 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-2
4 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2
8 to 15 inches—weathered bedrock
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 10 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 1.0 inch
Water-supplying capacity: About 5 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges
Dominant present vegetation: Barren

Characteristics of the Less Sloping Singatse Soil

Position on landscape: South-facing side slopes of mountains
Parent material: Kind—residuum; source—andesite, rhyolite, and, in some areas, granitic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood, bud sagebrush, Indian ricegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—80

Typical profile

0 to 4 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 45 to 55 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-2
4 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 2); estimated Unified classification—SM; estimated AASHTO classification—A-1, A-2
8 to 15 inches—weathered bedrock
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 10 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.7 to 1.0 inch
Water-supplying capacity: About 4 inches
Runoff: Rapid
Hydrologic group: D

Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave side slopes of mountains
Distinctive present vegetation: Singleleaf pinyon, Utah juniper
Inclusion 2
Position on landscape: Convex foot slopes
Distinctive present vegetation: Desert needlegrass, shadscale
Inclusion 3
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 4
Position on landscape: Concave toe slopes adjacent to channels
Distinctive present vegetation: Rubber rabbitbrush

Major Uses

Current uses: Rangeland, wildlife habitat

Wildlife habitat elements

Suitability of the very steep Singatse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor
Suitability of the less sloping Singatse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Ratings and restrictive features of the very steep Singatse soil for selected uses and practices

Range seeding: Poor—too arid, droughty, erodes easily
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the less sloping Singatse soil for selected uses and practices

Range seeding: Poor—too arid, droughty, depth to bedrock
Daily cover for landfill: Poor—slope, depth to bedrock
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, slope, small stones
Pond reservoir areas: Severe—slope, depth to bedrock
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Singatse, very steep—VIIs, nonirrigated; the less sloping Singatse—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Singatse, very steep—027X027N; the less sloping Singatse—027X027N

3031—Singatse-Jobpeak-Rock outcrop association

Map Unit Setting

Position on landscape: Mountains
Elevation: 4,500 to 6,500 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Composition

Major components:
• Singatse very stony loam, 50 to 75 percent slopes—Lithic Torriorthents, loamy-skeletal, mixed (calcareous), mesic—45 percent
• Jobpeak very gravelly loam, 50 to 75 percent slopes—Lithic Xeric Torriorthents, loamy-skeletal, mixed, nonacid, mesic—25 percent
• Rock outcrop—20 percent
Contrasting inclusions:
• Inclusion 1: Teguro stony loam, 30 to 50 percent slopes—Lithic Argixerolls, loamy, mixed, frigid—5 percent
• Inclusion 2: Lithic Haplargids very gravelly loam, 4 to 15 percent slopes—Lithic Haplargids, clayey, montmorillonitic, mesic—3 percent
• Inclusion 3: Lithic Haplargids very stony loam, 15 to 30 percent slopes—Lithic Haplargids, loamy-skeletal, mixed, mesic—2 percent

Characteristics of the Singatse Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum; source—volcanic rocks
Slope features: Length—long; shape—convex
Dominant present vegetation: Shadscale, Bailey greasewood

Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—35

Typical profile

0 to 4 inches—very stony loam; 40 to 50 percent cobbles and stones and 65 to 75 percent pebbles (by weight); platy structure; soft, very friable; moderately alkaline (pH 8.4); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
4 to 8 inches—very gravelly loam; 0 to 10 percent cobbles and stones and 50 to 70 percent pebbles (by weight); massive; slightly hard, very friable; strongly alkaline (pH 8.6); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM; estimated AASHTO classification—A-1, A-2
8 to 15 inches—weathered bedrock
15 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 10 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.4 to 0.6 inch
Water-supplying capacity: About 5 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.05; T value—1; wind erodibility group—7
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Jobpeak Soil

Position on landscape: Side slopes of mountains
Parent material: Kind—residuum, colluvium; source—volcanic rocks
Slope features: Length—long; shape—concave
Dominant present vegetation: Singleleaf pinyon, Utah juniper
Rock fragments on the surface: Kind—gravel, cobbles; percentage of surface covered—70

Typical profile

0 to 5 inches—very gravelly loam; 15 to 30 percent cobbles and stones and 40 to 65 percent pebbles (by weight); platy structure; soft, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GM, GM-GC; estimated AASHTO classification—A-1, A-2, A-4
5 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 4 to 12 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Moderate
Available water capacity: 0.3 to 0.5 inch
Water-supplying capacity: About 7 inches
Runoff: Very rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—7
Hazard of erosion: By water—severe; by wind—slight
Shrink-swell potential: Low
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Moderate

Characteristics of the Rock Outcrop

Position on landscape: Scattered small peaks and ridges
Dominant present vegetation: Barren

Contrasting Inclusions

Inclusion 1
Position on landscape: Concave, north-facing side slopes of mountains
Distinctive present vegetation: Singleleaf pinyon, Utah juniper
Inclusion 2
Position on landscape: Convex crests of mountains
Distinctive present vegetation: Low sagebrush
Inclusion 3
Position on landscape: Convex, south-facing side slopes of mountains
Distinctive present vegetation: Desert needlegrass, shadscale

Major Uses

Current uses: Rangeland, wildlife habitat

Ratings of the Jobpeak soil for use as woodland

Site index for common trees: Singleleaf pinyon—25; Utah juniper—25
Most important native understory plants: Mountain big sagebrush, Sandberg bluegrass

Wildlife habitat elements

Suitability of the Singatse soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor

Suitability of the Jobpeak soil for named elements: Wild herbaceous plants (nonirrigated)—poor; shrubs (nonirrigated)—poor; coniferous plants—poor

Ratings and restrictive features of the Singatse soil for selected uses and practices

Range seeding: Poor—too arid, droughty, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—depth to bedrock, slope
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Jobpeak soil for selected uses and practices

Range seeding: Poor—droughty, depth to bedrock, erodes easily
Daily cover for landfill: Poor—depth to bedrock, slope
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, slope
Roadfill: Poor—slope, depth to bedrock
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—small stones, slope, depth to bedrock
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Singatse—VIIs, nonirrigated; Jobpeak—VIIs, nonirrigated; Rock outcrop—VIIIs
Range site: Singatse—027X027N; Jobpeak—024X049N
Woodland suitability group: Jobpeak—3R

3040—Madeline-Millerlux association

Map Unit Setting

Position on landscape: Plateaus
Elevation: 5,200 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 75 days

Composition

Major components:
• Madeline very stony loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey, montmorillonitic, frigid—55 percent
• Millerlux very stony loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey, montmorillonitic, frigid—30 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—6 percent
• Inclusion 2: Pachic Argixerolls loam, 30 to 50 percent slopes—Pachic Argixerolls, fine-loamy, mixed, frigid—5 percent
• Inclusion 3: Aridic Argixerolls loam, 4 to 15 percent slopes—Aridic Argixerolls, coarse-loamy, mixed, frigid—4 percent

Characteristics of the Madeline Soil

Position on landscape: Side slopes of plateaus
Parent material: Kind—residuum; source—basalt
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Mountain big sagebrush, snowberry, Thurber needlegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—15

Typical profile

0 to 6 inches—very stony loam; 10 to 25 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC, CL; estimated AASHTO classification—A-6
6 to 13 inches—clay loam; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, CL; estimated AASHTO classification—A-2, A-6, A-7
13 to 17 inches—gravelly clay; 5 to 15 percent cobbles and stones and 20 to 45 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 3); estimated Unified classification—SC, CL, CH, GC; estimated AASHTO classification—A-2, A-7
17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.1 to 2.5 inches
Water-supplying capacity: About 9 inches
Runoff: Rapid
Hydrologic group: D

Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Millerlux Soil

Position on landscape: Summits of plateaus
Parent material: Kind—residuum somewhat influenced by loess; source—basalt
Slope features: Length—long; shape—convex
Dominant present vegetation: Low sagebrush, black sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, stones, cobbles; percentage of surface covered—26

Typical profile

0 to 6 inches—very stony loam; 15 to 25 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, GC; estimated AASHTO classification—A-4, A-6
6 to 13 inches—clay; 0 to 10 percent cobbles and stones and 0 to 15 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH; estimated AASHTO classification—A-7
13 to 18 inches—gravelly clay; 0 to 15 percent cobbles and stones and 25 to 35 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH, SC, CL; estimated AASHTO classification—A-7
18 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: The rims and summits of plateaus
Distinctive present vegetation: Barren
Inclusion 2
Position on landscape: North-facing side slopes of plateaus
Distinctive present vegetation: Oceanspray, basin wildrye
Inclusion 3
Position on landscape: Concave areas around seeps and springs
Distinctive present vegetation: Sedge, rush

Major Uses

Current uses: Wildlife habitat, rangeland

Wildlife habitat elements

Suitability of the Madeline soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Millerlux soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Madeline soil for selected uses and practices

Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, too clayey, hard to pack
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, low strength, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Millerlux soil for selected uses and practices

Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, hard to pack
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock, low strength, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, shrink-swell

Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, too clayey
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Madeline—VIIe, nonirrigated; Millerlux—VIIs, nonirrigated
Range site: Madeline—027X058N; Millerlux—024X016N

3050—Millerlux-Ninemile-Madeline association

Map Unit Setting

Position on landscape: Plateaus
Elevation: 5,500 to 7,600 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 75 days

Composition

Major components:
• Millerlux very stony loam, 4 to 15 percent slopes—Lithic Xerollic Haplargids, clayey, montmorillonitic, frigid—40 percent
• Ninemile very stony loam, 4 to 15 percent slopes—Lithic Argixerolls, clayey, montmorillonitic, frigid—35 percent
• Madeline very stony loam, 15 to 30 percent slopes—Lithic Argixerolls, clayey, montmorillonitic, frigid—10 percent
Contrasting inclusions:
• Inclusion 1: Rock outcrop—6 percent
• Inclusion 2: Xeric Torriorthents gravelly loam, 4 to 15 percent slopes—Xeric Torriorthents, loamy-skeletal, mixed (calcareous), frigid—5 percent
• Inclusion 3: Pachic Argixerolls loam, 15 to 30 percent slopes—Pachic Argixerolls, fine-loamy, mixed, frigid—4 percent

Characteristics of the Millerlux Soil

Position on landscape: Summits of plateaus
Parent material: Kind—residuum and a minor component of loess; source—basalt
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Low sagebrush, black sagebrush, Idaho fescue
Rock fragments on the surface: Kind—gravel, stones, cobbles; percentage of surface covered—26

Typical profile

0 to 6 inches—very stony loam; 15 to 25 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; moderately alkaline (pH 8.1); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SM-SC, SC; estimated AASHTO classification—A-4, A-6
6 to 13 inches—clay; 0 to 10 percent cobbles and stones and 0 to 15 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH; estimated AASHTO classification—A-7
13 to 18 inches—gravelly clay; 0 to 15 percent cobbles and stones and 25 to 35 percent pebbles (by weight); angular blocky structure; hard, firm; moderately alkaline (pH 8.3); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH, SC, CL; estimated AASHTO classification—A-7
18 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 12 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 2.3 to 2.7 inches
Water-supplying capacity: About 10 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.20; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—high; to concrete—low
Potential for frost action: Low

Characteristics of the Ninemile Soil

Position on landscape: Summits of plateaus
Parent material: Kind—residuum; source—basalt
Slope features: Length—long; shape—slightly concave
Dominant present vegetation: Low sagebrush, pine bluegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—15

Typical profile

0 to 7 inches—very stony loam; 40 to 70 percent cobbles and stones and 15 to 30 percent pebbles (by weight); subangular blocky structure; slightly hard, very friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13);

estimated Unified classification—CL-ML; estimated AASHTO classification—A-4

7 to 14 inches—gravelly clay; 0 to 15 percent cobbles and stones and 25 to 35 percent pebbles (by weight); angular blocky structure; hard, friable; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—CH; estimated AASHTO classification—A-7

14 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Very slow
Available water capacity: 1.3 to 1.6 inches
Water-supplying capacity: About 8 inches
Runoff: Medium
Hydrologic group: D
Erosion factors (surface layer): K value—.15; T value—1; wind erodibility group—8
Hazard of erosion: By water—slight; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Characteristics of the Madeline Soil

Position on landscape: Side slopes of plateaus
Parent material: Kind—residuum; source—basalt
Slope features: Length—long; shape—slightly convex
Dominant present vegetation: Mountain big sagebrush, snowberry, Thurber needlegrass
Rock fragments on the surface: Kind—gravel, cobbles, stones; percentage of surface covered—15

Typical profile

0 to 6 inches—very stony loam; 10 to 25 percent cobbles and stones and 20 to 35 percent pebbles (by weight); platy structure; slightly hard, very friable; neutral (pH 7.0); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—GC, SC, CL; estimated AASHTO classification—A-6

6 to 13 inches—clay; 0 to 10 percent cobbles and stones and 10 to 20 percent pebbles (by weight); subangular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 13); estimated Unified classification—SC, CL; estimated AASHTO classification—A-2, A-6, A-7

13 to 27 inches—gravelly clay; 5 to 15 percent cobbles and stones and 25 to 45 percent pebbles (by weight); angular blocky structure; hard, firm; neutral (pH 7.2); nonsaline (less than 2 mmhos/cm); nonsodic (SAR less than 3); estimated Unified classification—SC, CL, CH, GC; estimated AASHTO classification—A-2, A-7

17 inches—unweathered bedrock

Soil and water features

Depth to bedrock: 10 to 20 inches
Depth to a seasonal high water table: More than 60 inches
Flooding: None
Permeability: Slow
Available water capacity: 2.1 to 2.5 inches
Water-supplying capacity: About 7 to 9 inches
Runoff: Rapid
Hydrologic group: D
Erosion factors (surface layer): K value—.17; T value—1; wind erodibility group—8
Hazard of erosion: By water—moderate; by wind—slight
Shrink-swell potential: High
Corrosivity: To steel—moderate; to concrete—low
Potential for frost action: Low

Contrasting Inclusions

Inclusion 1
Position on landscape: Shoulder slopes of plateaus
Distinctive present vegetation: Barren

Inclusion 2
Position on landscape: Shoulder slopes of plateaus
Distinctive present vegetation: Idaho fescue, low sagebrush

Inclusion 3
Position on landscape: North-facing side slopes of plateaus
Distinctive present vegetation: Oceanspray, basin wildrye

Major Uses

Current uses: Wildlife habitat, rangeland

Wildlife habitat elements

Suitability of the Millerlux soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Ninemile soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair
Suitability of the Madeline soil for named elements: Wild herbaceous plants (nonirrigated)—fair; shrubs (nonirrigated)—fair

Ratings and restrictive features of the Millerlux soil for selected uses and practices

Range seeding: Poor—droughty

Daily cover for landfill: Poor—depth to bedrock, hard to pack
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock, low strength, shrink-swell
Roadfill: Poor—depth to bedrock, low strength, shrink-swell
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Ninemile soil for selected uses and practices

Range seeding: Poor—droughty, large stones
Daily cover for landfill: Poor—depth to bedrock, too clayey, hard to pack
Shallow excavations: Severe—depth to bedrock
Local roads and streets: Severe—depth to bedrock, low strength
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Ratings and restrictive features of the Madeline soil for selected uses and practices

Range seeding: Poor—droughty
Daily cover for landfill: Poor—depth to bedrock, too clayey, hard to pack
Shallow excavations: Severe—depth to bedrock, slope
Local roads and streets: Severe—depth to bedrock, low strength, slope
Roadfill: Poor—depth to bedrock, low strength
Sand: Improbable source—excess fines
Gravel: Improbable source—excess fines
Topsoil: Poor—depth to bedrock, small stones, slope
Pond reservoir areas: Severe—depth to bedrock, slope
Embankments, dikes, and levees: Severe—thin layer

Interpretive Groups

Capability classification: Millerlux—VIIs, nonirrigated; Ninemile—VIIs, nonirrigated; Madeline—VIIe, nonirrigated
Range site: Millerlux—024X016N; Ninemile—027X046N; Madeline—027X058N

Prime Farmland

In this section, prime farmland is defined and the soils in the survey area that are considered prime farmland are listed.

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 the land that is best suited to food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. It either is used for food or fiber crops or is available for those crops. The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner. Prime farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent. More information about the criteria for prime farmland is available at the local office of the Soil Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Soils that receive an inadequate amount of rainfall qualify for prime farmland only in areas where this limitation has been overcome by irrigation. Onsite evaluation is needed to determine whether or not the limitation has been overcome by corrective measures.

The following map units meet the soil requirements for prime farmland where irrigated. The extent of each listed map unit is shown in table 4. The location of each map unit is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

231	Dun Glen very fine sandy loam, 2 to 4 percent slopes
233	Dun Glen very fine sandy loam, 0 to 2 percent slopes
234	Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes
360	Needle Peak silt loam, slightly saline-sodic
400	Orovada loam, 0 to 2 percent slopes
470	Raglan silt loam
480	Rebel loam, 0 to 2 percent slopes
481	Rebel loam, 2 to 4 percent slopes
482	Rebel loam, rarely flooded, 0 to 2 percent slopes
600	Valmy fine sandy loam, 0 to 2 percent slopes
610	Weso very fine sandy loam, 0 to 2 percent slopes
980	Mazuma very fine sandy loam, 0 to 4 percent slopes
1020	Wholan very fine sandy loam, rarely flooded, 0 to 2 percent slopes
1111	Yipor silt loam, sandy substratum

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, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

A.R. Melis, district conservationist, and Edward W. Biggs, soil conservationist, helped prepare this section.

In this section, general management needed for crops and pasture is suggested and the system of land capability classification used by the Soil Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

Resource management systems are a combination of interrelated conservation practices and management techniques used in arresting or preventing deterioration of cropland or pasture and in maintaining the productive capability of the soil. These systems keep erosion within acceptable limits and help to solve other problems that may restrict production.

Different management is needed on diverse kinds of soil. Basic management practices, however, apply to all cultivated soils. These practices are described in the following paragraphs.

Conservation cropping systems.—A conservation cropping system consists of a crop rotation and the soil-improving cultural and management practices that more than offset the effects of soil-depleting crops and of practices that result in deterioration of tilth. The system should control erosion and maintain or improve fertility and the physical condition of the soil. It should include perennial legumes, grass-legume mixtures, or other crops that produce large quantities of residue to compensate for the crops in the rotation that produce little or no residue.

Applying the proper kinds and amounts of fertilizer helps to maintain or improve fertility. Limiting tillage operations to those that are essential for seedbed preparation and weed control and timing them to coincide with the proper soil moisture condition help to prevent compaction and maintain tilth.

A typical cropping system used in this survey area consists of 8 to 10 years of alfalfa and 2 years of small grain. Residue from small grain is usually returned to the soil. Seeding alfalfa into the grain stubble helps to prevent excessive erosion and frost damage. The stubble reduces the evaporation rate and minimizes surface crusting.

Irrigation water management.—Proper irrigation water

management is the application of irrigation water at rates and in amounts adequate to produce high crop yields and to minimize soil and water losses. Applying the water according to the needs of the crop and the characteristics of the soil results in an efficient irrigation system. Properly locating and controlling the system can ensure that seepage losses are minimal. Control structures are needed to facilitate water management. The design of an irrigation system is governed by the method of irrigation to be used and the expected efficiency in applying water.

Efficient water application involves consideration of the available water capacity of the soil, the rate at which water penetrates the surface and moves through the soil, and the amount of water required by the crop. Most crops should be irrigated when 40 to 50 percent of the available moisture in the top half of the root zone has been used. Adjusting the application of irrigation water to the available water capacity, the water intake rate, and the needs of the crop generally helps to prevent overirrigating, the leaching of plant nutrients, and a rise in the level of a high water table.

Management of saline soils.—Like most soils in arid and subarid regions, the soils in this survey area contain at least small quantities of soluble salts and alkali. Because the amount of rainfall is low and the rate of evaporation is high, salts are not leached out of the root zone. In some soils high concentrations of salts and sodium limit or prevent the growth of crops. In addition, many low-lying areas receive salty water from runoff or seepage. Surface evaporation of this water generally results in an increase the content of soluble salts on or in the soils. In some areas that have a high water table, water carrying dissolved salts rises in the soils through capillary action. The soluble salts, which are readily dissolved in water, can be moved to any part of the soil profile.

A saline soil contains excessive amounts of soluble salts. A sodic soil contains excessive amounts of exchangeable sodium. A saline-sodic soil contains excessive amounts of both soluble salts and sodium.

Saline-sodic phases of several of the soil series in the survey area have been mapped. The map unit name generally does not indicate the degree to which these soils are affected, nor does it indicate that they contain both salts and sodium. This information is given in the map unit descriptions.

Four classes of salinity are recognized in the detailed map unit descriptions. These classes are nonsaline, slightly saline, moderately saline, and strongly saline.

A *nonsaline* soil contains less than 0.15 percent soluble salts. The electrical conductivity of the saturation extract is less than 4 millimhos per centimeter at 25 degrees C.

A *slightly saline* soil contains 0.15 to 0.35 percent soluble salts. The electrical conductivity of the saturation extract is 4 to 8 millimhos per centimeter at 25 degrees C.

A *moderately saline* soil contains 0.35 to 0.65 percent soluble salts. The electrical conductivity of the saturation extract is 8 to 16 millimhos per centimeter at 25 degrees C.

A *strongly saline* soil contains more than 0.65 percent soluble salts. The electrical conductivity of the saturation extract is more than 16 millimhos per centimeter at 25 degrees C.

Four classes of sodicity are recognized in the detailed map unit descriptions. These classes are nonsodic, slightly sodic, moderately sodic, and strongly sodic. A *nonsodic* soil contains less than 15 percent exchangeable sodium; a *slightly sodic* soil, 15 to 25 percent; a *moderately sodic* soil, 25 to 40 percent; and a *strongly sodic* soil, more than 40 percent.

Soils differ in the kinds of salts they contain and in the practices needed for improvement. For this reason, each soil requires individual treatment. Some general guidelines, however, can be given.

A good supply of water and an adequate drainage system are needed to reclaim any salt- or sodium-affected soil. Two methods of applying water are commonly used. One method is land leveling that results in flat basins in which the water can accumulate. The other method involves leveling the land to a uniform grade and then flooding between border dikes. If drainage is adequate and if large amounts of water are applied, either method can leach the soluble salts out of the root zone. This leaching process is more difficult where a soil contains an excessive amount of exchangeable sodium. In addition to drainage and leaching, other practices are needed to improve sodium-affected soils.

Chemical amendments used to replace sodium are gypsum and its various forms, including gypsite, anhydrite, and selenite, as well as elemental sulfur, sulfuric acid, iron sulfate, and aluminum sulfate. Any of these amendments can be successfully used, although some react faster than others. Cost, availability, and the content of calcium carbonates in the soil generally determine the choice. The amount of an amendment needed can be determined by laboratory analysis of soil samples, which indicates the amount of sodium that must be replaced if the soil is to be improved.

An alternative to reclamation through the use of large quantities of gypsum is the seeding of salt- and sodium-tolerant grasses. The well suited grasses include tall wheatgrass, western wheatgrass, and alta fescue. These grasses can grow in soils that have relatively strong concentrations of both soluble salts and sodium.

Applications of plant nutrients.—Most crops in the survey area respond well to applications of solid or liquid fertilizer. Specific fertilizer requirements are based on soil sampling or analysis of plant tissue. Applications of phosphorus and nitrogen increase the production of small grain and aid in establishing alfalfa. Unless seeded in combination with grasses, established alfalfa generally requires only applications of phosphorus throughout the duration of the stand.

Erosion control.—Protection of the surface layer from wind erosion and water erosion is important because this layer contains most of the organic matter in the soil and is generally more fertile than the subsoil. Wind erosion can be controlled by leaving a protective plant cover on the surface and minimizing tillage during windy periods. Water erosion generally can be controlled by leveling to a proper irrigation grade and by applying irrigation water at the proper rate.

Pasture management.—Proper pasture management includes a grazing system that maintains a prolonged stand of high-quality grasses and legumes, protects the soil from erosion, and limits water losses. Two biological systems, plants and animals, are included in the management program. Their needs can be best met by rotating grazing among several pastures. A rotation grazing system allows irrigation, drying, and regrowth in each pasture during the grazing cycle. Grazing when the pastures are too wet results in compaction and deterioration of soil structure and decreases the rate of water intake.

Forage yields generally can be increased by applications of commercial fertilizer or barnyard manure. Mowing or applying selected herbicides can control weeds. Manure droppings can be spread with a drag in spring.

The frequency of irrigation varies, depending on soil texture, the number of daylight hours, temperature, and plant growth and vigor. Irrigation is needed before the soil moisture is depleted below 50 percent of the available water capacity.

Hayland management.—Proper hayland management prolongs the life of desirable forage plants, maintains or improves the quality of forage, protects the soil from erosion, and limits water losses. Alfalfa hay is grown on most of the hayland in the survey area. High-quality, certified, inoculated seeds of climatically adapted species produce the highest yields during the relatively short growing season. The amount of irrigation water and the frequency of application depend on the available water capacity of the soil and the rate of evapotranspiration.

Land leveling, grading, shaping, and subsoiling should be completed before final seedbed preparation. An annual crop should be grown for a year or two before alfalfa is established or reestablished. Yields generally can be increased by applications of fertilizer. For the highest quality forage, alfalfa should be harvested at about one-tenth bloom or when new crown buds are 0.5 to 1.0 inch long.

Aftermath grazing can be used in fall or winter. Leaving a stubble height of 3 to 4 inches helps to control erosion. Plants should not be grazed in late winter or in early spring, when they have started new growth. Grazing at this time depletes food reserves in the roots. This depletion can damage the stand and reduce forage production.

Drainage.—Soils on flood plains along perennial and intermittent streams generally have a seasonal high water table from December through July. The water table rises in fall, when the rate of evapotranspiration decreases, and is at a maximum height during peak runoff periods in spring. Soils that are flooded naturally or by seasonal irrigation may require a surface drainage system. Field ditch mains or laterals are needed to dispose of excess surface or subsurface water, to intercept ground water, to control the level of the ground water, and to aid in leaching saline or alkali soils.

Yields per Acre

Information about the average yields per acre that can be expected of the principal crops grown in the survey area under a high level of management can be obtained at the local office of the Soil Conservation Service. In any given year, yields may be higher or lower because of variations in rainfall and other climatic factors.

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.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The

numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but 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

About 96 percent of this survey area is rangeland. Almost all of the agricultural income in the area is derived from the sale of livestock, mainly cattle. Cow-calf enterprises are dominant, but cow-calf-yearling enterprises are in some areas. The ranches in the survey area range from about 230,000 acres to 5,000 acres in size. Most of the grazing in the survey area is on land administered by the Bureau of Land Management.

On some ranches the forage produced on rangeland is supplemented by aftermath grazing on hayland and in fields of small grain stubble in fall. In winter the native forage is supplemented by hay. Creep feeding is used to increase the market weight of calves and yearlings on some ranches.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kinds of soil. Effective management is based on the relationship of soils to vegetation and water.

The tables in the section "Rangeland Plants and Woodland Understory" show the rangeland plants and woodland understory for each major soil and contrasting inclusion in the detailed soil map units; the common plant name and plant symbol for the grasses, forbs, and shrubs that make up the potential native plant community on the unit; the percentage composition of each species; and the total annual production of vegetation in favorable, normal, and unfavorable years. There are tables only for those soils that are used for or suited to rangeland.

The *percentage composition* is the expected percentage of the total annual production. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Potential 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.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by

comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community in a given use.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for the site. Such management generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Grazing management should be at an intensity that maintains enough cover to protect the soil and maintains or improves the quantity and quality of desirable vegetation. This management applies to all grazing animals, including livestock, game animals, and wild horses.

A planned grazing system is the most practical and efficient way to achieve good management of livestock grazing. Where this system is applied, the same grazing unit is not grazed at the same time year after year. Two or more grazing units are alternately rested in a planned sequence over a period of years. The rest period should extend at least through the growing season of the key plants.

The planned grazing system should be designed so that it not only meets the needs of the individual grazing unit but also helps to achieve management objectives. A uniform distribution of grazing can be achieved by providing livestock watering facilities and salt, fencing, and constructing livestock trails.

In some areas measures that accelerate range improvement can be used. Good grazing management should be applied in conjunction with these measures.

Brush control is needed when the amount of the less desirable woody species is in excess of what is natural for the site. If effectively planned and applied, this practice can be beneficial to both livestock and wildlife and can minimize sedimentation and improve the quality of the watershed.

Chemical treatment and prescribed burning are effective in controlling brush. When chemicals are applied according to the manufacturer's recommendations and at the proper time, good results can be expected. There must be an adequate amount of desirable plant species in the understory to respond to the treatment. Prescribed burning is relatively inexpensive but requires precautions. It can be successful if a good understory is available to provide fuel and if the burning is properly timed. Prescribed burning is less selective than chemical treatment.

Mechanical treatment practices, such as plowing, chaining, and beating, are effective in controlling brush on certain sites, but the cost of these practices is high.

Range seeding is needed when the range has so deteriorated that the desired plant species have disappeared. It also is needed as critical area treatment following a wildfire. Evaluating the sites to be seeded on the basis of the soil, climate, topography, and planned use helps to determine the suitable species and the seeding techniques that can be used. Rainfall strongly influences the success of seeding in this survey area. Precipitation fluctuates significantly from year to year even in the areas of higher rainfall. The success of range seeding depends on the amount of moisture available during the growing season.

In the detailed soil map units, soils are rated for planned range seeding. The criteria used to develop these ratings are listed in the "Appendix." If critical area treatment is needed, a good plant cover can help to prevent accelerated erosion on bare soils that are poorly suited to seeding.

Woodland Management

Woodland in this survey area is limited to small areas of singleleaf pinyon and Utah juniper and a few small stands of quaking aspen. These sites are mainly on the south- and west-facing crests and side slopes of mountains. They are on the East, Humboldt, Sonoma, Stillwater, and Tobin Ranges and on Augusta Mountain.

The woodland has low potential for wood products. It is used mainly for wildlife habitat and for understory grazing by livestock. The pinyon and juniper are used for fenceposts and firewood on a limited basis. Steep slopes limit access to most of the stands.

The descriptions of the detailed soil map units can be used by woodland owners or forest managers in planning the use of soils for wood crops. In the descriptions, the soils that are suitable for wood crops are identified and the woodland suitability group for each of these soils is identified. The group is indicated by an ordination symbol. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the ordination symbol, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R*

indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, a restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; and *F*, a high content of coarse fragments. The letter *O* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

The potential productivity of common trees on a soil is expressed as a site index. This index is the basal area that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Woodland Understory Vegetation

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some woodland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation varies with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive.

The potential production of understory vegetation is given for each soil suitable for woodland in the tables under the heading "Rangeland Plants and Woodland Understory." An *X* in the tables indicates that the named plant occurs in the understory when the canopy density is most nearly typical of woodland in areas where the production of wood crops is highest.

The total production of understory vegetation includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in favorable, normal, and unfavorable years. In a favorable year, soil moisture is above average during the optimum part of the growing season; in a normal year, soil moisture is average; and in an unfavorable year, it is below average.

Windbreaks and Environmental Plantings

A.R. Melis, district conservationist, and Edward W. Biggs, soil conservationist, helped prepare this section.

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Few windbreaks are planted in this survey area, although they are desirable because they can protect livestock and buildings. The windbreaks in the area should be irrigated.

The species that are suited to the soils on the proposed site for the windbreak should be selected for planting. The species that can be grown on deep, well drained soils include Fremont cottonwood (male), Siberian elm, Scotch pine, cotoneaster, and caragana. Poplar, cottonwood, Russian-olive, golden willow, buffaloberry, redosier dogwood, and honeysuckle can be grown on wet soils. The species that can be grown on saline-sodic soils include Siberian elm, mulberry, Russian-olive, buffaloberry, fourwing saltbush, and big saltbush. The species that can be grown on shallow soils include honeylocust, Rocky Mountain juniper, chokecherry, cotoneaster, currant, caragana, and pyracantha.

Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local offices of the Soil Conservation Service or the Cooperative Extension Service or from a nursery.

Wildlife Habitat

Wildlife is a valuable resource in the survey area. It provides opportunities for such outdoor activities as hunting and fishing.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Good management is needed to provide food and cover for wildlife. Most managed wildlife habitat is created, improved, or maintained by planting suitable

vegetation, by manipulating the existing vegetation to bring about the natural establishment of desired plants, or by a combination of these. The combination of habitat elements needed by specific species of wildlife generally requires several kinds of soil and a combination of land uses. As a result, the best interpretations for wildlife habitat are those that relate to the map units described in the section "General Soil Map Units." In the following paragraphs, the general soil map units in the survey area are divided into wildlife areas that differ from one another in potential wildlife species and environmental factors.

Wildlife area 1 is in general soil map units 2, 3, and 5. The soils in this area are nearly level to moderately sloping and are on bolson and semibolson floors. The native vegetation is big saltbush, black greasewood, shadscale, and Bailey greasewood.

The wildlife species in this area include jackrabbit, coyote, bobcat, and some quail. The availability of water is the main concern in managing the habitat. The rangeland in the area should be managed so that the content of salts and alkali in the soils is not increased. The salts and alkali result in a less desirable plant community.

Wildlife area 2 is in general soil map unit 4. The soils in this area are nearly level and are on the broad flood plains, stream terraces, and lake plain terraces along the Humboldt River. The vegetation is mainly basin wildrye, willows, alkali sacaton, inland saltgrass, and black greasewood in strongly salt- and alkali-affected areas.

The wildlife species in this area include ducks, geese, beaver, muskrat, cottontail, jackrabbit, mule deer, coyote, bobcat, pheasant, and quail. Management of the area should include measures that reduce the content salts in the soils. Long-term management is limited by periods of flooding caused by the uncontrolled flow of the Humboldt River. The river supports such species as catfish and carp.

Wildlife area 3 is in general soil map units 6, 7, and 8. The soils in this area are on fan piedmonts, fan skirts, and inset fans. The native vegetation varies. It includes black greasewood, bud sagebrush, shadscale, Wyoming big sagebrush, grasses, and some black sagebrush. Because of a shortage of water, the area has relatively few kinds of wildlife species and a low population of wildlife. Some of the area is used as cropland.

The wildlife species in this area include jackrabbit, coyote, and bobcat. Quail is in or near the areas of cropland. A few mule deer and Hungarian partridge use this area in winter. In cultivated areas fence rows and ditchbanks that support desirable plants provide good habitat for quail and other kinds of openland wildlife. The availability of water is the main concern in managing the habitat.

Wildlife area 4 is in general soil map units 9, 10, 11, 13, 14, and 16. The soils in this area are on moderately sloping to very steep foothills and at low and mid elevations on mountains. The native vegetation is mainly big sagebrush, low sagebrush, and grasses. Black sagebrush is in areas of limestone, and shadscale and bud sagebrush are in some areas on foothills.

The wildlife species in this area include jackrabbit, cottontail, deer, coyote, bobcat, chukar, Hungarian partridge, and sage grouse. Drainageways, seeps, and springs provide some water in the area. Properly located watering facilities can improve the habitat.

Wildlife area 5 is in general soil map units 12 and 15. The soils in this area are on moderately sloping to very steep, high mountains. The native vegetation is mainly mountain big sagebrush, low sagebrush, and an understory of bluebunch wheatgrass and Idaho fescue.

Included in this area are small wet meadows, which significantly enhance the overall potential of the area for wildlife habitat. The meadows should be protected from gullying.

The wildlife species in this area include mule deer, sage grouse, chukar, jackrabbit, cottontail, coyote, and bobcat.

Wildlife area 6 is in general soil map unit 14. The soils in this area are on steep and very steep side slopes on intermediate mountains. The native vegetation is mainly singleleaf pinyon and Utah juniper. Areas of limestone have an understory of mountain big sagebrush and black sagebrush.

The wildlife species in this area include mule deer, chukar, cottontail, coyote, and bobcat. Drainageways, seeps, and springs provide some water in the area.

Recreation

This survey area can be developed for recreational uses in many areas, including mountainous areas, valley bottoms, and other areas. The chief recreational activities in the area are hunting, fishing, picnicking, riding, and hiking.

Restrictive soil features, such as wetness, slope, texture of the surface layer, and susceptibility to flooding, should be considered in the selection of sites for recreational development. Other important considerations are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also

important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

Camp areas, picnic areas, playgrounds, and paths and trails require special attention.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not flooded more than once a year during the period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Engineering

The section "Detailed Soil Map Units" 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 *(21)*. The ratings are given for roadfill; daily cover for landfill; shallow excavations; local roads and streets; pond reservoir areas; embankments, dikes, and levees; sand; topsoil; gravel; terraces and diversions; drainage; and irrigation. The ratings are based on observed performance of the soils and on estimated data given in the map unit descriptions. Information on other uses can be obtained from local offices of the Soil Conservation Service.

The information 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. 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. The criteria used to determine the ratings are provided in the "Appendix." 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 kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to 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; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, and earthfill; plan ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the map unit descriptions, along with the soil maps, series 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."

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 are given in the section "Detailed Soil Map Units."

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 given in the map unit descriptions include the range of grain-size distribution, 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

Estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area are given in the detailed map unit descriptions and in table 5. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 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 system adopted by the American Association of State Highway and Transportation Officials *(1)* and the Unified soil classification system *(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, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. The estimates are rounded to the nearest 5 percent.

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 generally are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Estimates of some characteristics and features that affect soil behavior are given in the detailed map unit descriptions. 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.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

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 total inches of water for the soil profile. 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 map unit descriptions. Salinity affects the suitability of a soil for rangeland seeding and crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodicity is a measure of exchangeable sodium in the soil at saturation. It is expressed as a sodium adsorption ratio (SAR), or the ratio of sodium to calcium plus magnesium. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The sodicity of irrigated soils is affected by the quality of irrigation water and management of the soil. Hence, the sodicity of soils in individual fields can differ greatly from the value given in the map unit descriptions. Sodicity affects the suitability of a soil for range seeding and crop production and the stability of the soil if used as construction material.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent.

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, very fine sand, sand, and organic matter (up to 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. Soils containing rock fragments can occur in any group. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.
6. Noncalcareous loams and silt loams that are more that 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

The *hazard of erosion* is an estimate of the likelihood of erosion by water and wind when the soil is bare. The hazard of water erosion is determined on the basis of erosion factor K and the slope. The hazard of wind erosion is determined on the basis of the stability of the soil surface and the climate. The guidelines used in estimating the hazard of erosion are given in the "Appendix."

Soil and Water Features

Estimates of various soil and water features are given in the detailed map unit descriptions. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams or by runoff from

adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

The frequency and duration of flooding and the time of year when flooding is most likely are given in the map unit descriptions.

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; *occasional* that it occurs, on the average, no more than once in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. The depth to the seasonal high water table is indicated in the map unit descriptions. A water table that is seasonally high for less than 1 month is not indicated. Only saturated zones within a depth of about 6 feet are indicated.

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.

A *hardpan* 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 for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Corrosivity pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(20)*. 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 6 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 Orthid (*Orth*, meaning true, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Camborthids. (*Camb*, meaning change, plus *orthid*, a suborder of the Aridisols).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Camborthids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy-skeletal, mixed, mesic Typic Camborthids.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The typical pedon of some of the soils in the survey area is located in the eastern part of Humboldt County because a large part of Pershing County was mapped in an older survey of the Sonoma area, which included parts of Humboldt and Pershing Counties *(22)*. For these soils, the description of the typical pedon already available has been used regardless of the survey area in which the pedon occurred.

The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(19)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(20)*. Unless otherwise stated, matrix colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Adelaide Series

The Adelaide series consists of shallow, well drained, very slowly permeable soils that formed in a mantle of loess high in content of volcanic glass over mixed alluvium. Adelaide soils are on fan piedmont remnants. Slopes are 0 to 15 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Entic Durorthids

Typical pedon: Adelaide silt loam, 0 to 2 percent slopes:

A—0 to 2 inches; brownish gray (10YR 6/2), slightly micaceous silt loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and few fine vesicular pores; neutral (pH 6.8); abrupt smooth boundary. (1 to 5 inches thick)

Bw—2 to 8 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and few fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 7 inches thick)

Bq—8 to 11 inches; light gray (10YR 7/2) loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure; very hard, firm, nonsticky and slightly plastic; few very fine and fine roots in the matrix, but common in fractures; many very fine and fine tubular pores; common thin pale brown (10YR 6/3) silica films in bands and pores and occurring as bridges between sand grains; 10 percent pebbles; weak silica cementation; strongly alkaline (pH 8.6); clear wavy boundary. (2 to 4 inches thick)

Bqkm—11 to 14 inches; light gray (10YR 7/2) and pale brown (10YR 6/3), strongly silica-cemented duripan, grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) moist; moderate fine angular and subangular blocky structure; extremely hard, firm and very firm; common very fine and few fine exped roots; common very fine interstitial pores; many thin silica films on faces of peds and lining pores and occurring as laminae; many medium and fine prominent white (10YR 8/2) lime veins and coatings; slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (2 to 5 inches thick)

Btkb—14 to 23 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; few very fine roots; few very fine tubular and many very fine interstitial pores; many thin clay films on faces of peds and lining pores; many fine distinct white (10YR 8/2) lime coatings and filaments; strongly effervescent; strongly alkaline (pH 9.0); clear wavy boundary. (5 to 10 inches thick)

Bqkb—23 to 30 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular and common very fine interstitial pores; 20 percent pebbles; 20 percent very hard and firm durinodes; common fine distinct white (10YR 8/2) lime veins; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (5 to 10 inches thick)

2B'qkm—30 to 40 inches; light gray (10YR 7/2) extremely gravelly loamy sand that is indurated in the upper one-eighth to one-quarter inch and weakly cemented below, brown (10YR 5/3) moist; massive; extremely hard, extremely firm in the upper part, and slightly hard, friable in the lower part; common very fine interstitial pores; 80 percent pebbles; many very fine white (10YR 8/2) lime coatings on indurated material and on discontinuous silica laminae in the lower part and very fine white lime coatings completely covering pebbles in the upper part and covering the underside of pebbles in the lower part; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (7 to 14 inches thick)

2Ck—40 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, brown (10YR 5/3) moist; single grain; loose; many fine interstitial pores; 80 percent pebbles; white (10YR 8/2) lime coatings on the underside of some pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 11 miles south of Winnemucca, 0.2 mile north of a county road and 0.6 mile west of the Sonoma Ranch house, about 700 feet north and 300 feet west of the southeast corner of sec. 9, T. 34 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 49 to 53 degrees F
Depth to a duripan: 10 to 15 inches
Depth to the buried indurated pan: 26 to 40 inches
Control section: Content of clay—6 to 18 percent; texture—loam, silt loam, or very fine sandy loam; content of rock fragments—as much as 5 percent

Other features: Content of silt and very fine sand ranging from 65 to 80 percent

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate, thin to thick platy; massive in some pedons
- Reaction—neutral or mildly alkaline

Bw horizon:
- Structure—weak fine or medium subangular blocky or thin to thick platy; massive in some pedons
- Other features—considered a cambic horizon where its base is below a depth of 10 inches

Bqkm horizon:
- Structure—platy; massive in some pedons
- Consistence—extremely hard or very hard
- Other features—lime coatings on 10 to 30 percent of faces of peds and on silica laminae; a slightly effervescent to strongly effervescent matrix

Btkb horizon:
- Content of clay—27 to 40 percent
- Content of rock fragments—as much as 5 percent
- Structure—moderate or strong, fine or medium angular blocky
- Reaction—moderately alkaline or strongly alkaline
- Other features—strongly effervescent or violently effervescent; white lime coatings on silica laminae, faces of peds, or pebbles in as much as 50 percent of the various horizons of the buried soil

2B'qkm horizon:
- Structure—moderate or strong, thin or medium platy; massive in some pedons
- Thickness—⅛ inch to 6 inches of laminated strata separated by less strongly cemented material

Alley Series

The Alley series consists of very deep, well drained, moderately slowly permeable soils that formed in colluvium derived from basalt and andesite and somewhat influenced by loess. Alley soils are on low mountains and foothills. Slopes are 30 to 50 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Durixerollic Haplargids

Typical pedon: Alley very cobbly very fine sandy loam, 30 to 50 percent slopes, in an area of Alley-Snowmore-Rock outcrop association where pebbles cover approximately 25 percent, cobbles 15 percent, and stones 15 percent of the surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very cobbly very fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine and few coarse vesicular pores; 25 percent cobbles, 10 percent pebbles; strongly effervescent; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 5 inches thick)

A2—2 to 5 inches; light brownish gray (10YR 6/2) very cobbly fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many fine tubular pores; 25 percent cobbles, 10 percent pebbles; strongly effervescent; mildly alkaline (pH 7.8); clear smooth boundary. (0 to 3 inches thick)

Bt1—5 to 18 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 5 percent cobbles, 15 percent pebbles; few thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 13 inches thick)

Bt2—18 to 22 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine roots; many very fine and fine tubular pores; 15 percent pebbles, 5 percent cobbles; few thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); clear smooth boundary. (4 to 9 inches thick)

Bqk—22 to 30 inches; very pale brown (10YR 7/3) cobbly fine sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; many very fine tubular pores; 20 percent cobbles, 10 percent pebbles; weak silica and lime cementation; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (6 to 10 inches thick)

2Bk—30 to 60 inches; very pale brown (10YR 7/3) very cobbly fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 25 percent cobbles, 15 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 37 miles south of Winnemucca, on the east slope of the East Range, about 350 feet

north and 800 feet west of the southeast corner of sec. 29, T. 30 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to strata of weak silica and lime cementation: 16 to 30 inches
Depth to carbonates: 16 to 22 inches
Other features: Few to many fine to coarse lime segregations in most pedons where depth to the Bqk horizon is more than 22 inches

A horizon:
- Value—5 or 6 dry, 3 or 4 moist; more than 5.5 dry and 3.5 moist when the uppermost 7 inches is mixed
- Chroma—2 or 3
- Structure—weak or moderate, very thin to thick, platy or granular
- Reaction—neutral or mildly alkaline

B horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2 to 4
- Texture—gravelly loam, gravelly clay loam, or gravelly sandy clay loam
- Content of clay—20 to 30 percent
- Content of rock fragments—15 to 30 percent, mainly pebbles
- Structure—weak or moderate, fine to coarse subangular blocky
- Reaction—mildly alkaline or moderate alkaline

Bqk horizon:
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—1 to 4
- Texture—gravelly fine sandy loam, gravelly sandy loam, or cobbly fine sandy loam
- Content of rock fragments—15 to 35 percent, mainly pebbles or cobbles
- Consistence—hard or very hard
- Reaction—moderately alkaline or strongly alkaline
- Silica cementation—few thin or very thin, discontinuous silica laminae in some pedons; some pedons commonly having durinodes in a friable matrix below the horizons with weak cementation

2Bk horizon (not in all pedons):
- Content of rock fragments—40 to 60 percent, when mixed, mostly pebbles and cobbles; a few stones in some pedons

Alyan Series

The Alyan series consists of moderately deep, well drained, slowly permeable soils that formed in residuum and colluvium derived from basalt and siliceous tuff. Alyan soils are on side slopes of plateaus and mountains. Slopes are 15 to 30 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Fine, montmorillonitic, frigid Aridic Argixerolls

Typical pedon: Alyan extremely stony loam, 15 to 30 percent slopes, in an area of Alyan-Chen-Rock outcrop association where stones cover approximately 15 percent and pebbles and cobbles 10 percent each of the surface:

A1—0 to 5 inches; grayish brown (10YR 5/2) extremely stony loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common fine vesicular and many fine tubular pores; 20 percent stones, 2 percent cobbles, 2 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (1 to 5 inches thick)

A2—5 to 11 inches; grayish brown (10YR 5/2) very stony loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many fine tubular pores; 20 percent stones, 10 percent cobbles, 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (3 to 9 inches thick)

Bt1—11 to 15 inches; brown (7.5YR 5/2) gravelly clay loam, dark brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; few fine tubular pores; 5 percent cobbles, 10 percent pebbles; many thin clay films on faces of peds; mildly alkaline (pH 7.8); clear smooth boundary. (3 to 8 inches thick)

Bt2—15 to 33 inches; light brown (7.5YR 6/4) gravelly clay, brown (7.5YR 4/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few fine tubular pores; 10 percent pebbles, 5 percent cobbles; continuous, thin clay films on faces of peds; mildly alkaline (pH 7.8); abrupt smooth boundary. (4 to 18 inches thick)

2R—33 inches; fractured basalt.

Type location: Pershing County, Nevada; approximately 8 miles south of Table Mountain, in the East Range, about 2,000 feet west and 700 feet south of the northeast corner of sec. 23, T. 29 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season;

moist in winter and spring, dry from mid-June through mid-October
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 8 to 18 inches thick; includes the upper part of the argillic horizon
Depth to bedrock: 20 to 40 inches
Combined thickness of the A and Bt horizons: 20 to 40 inches
Control section: Content of clay—40 to 55 percent; content of rock fragments—average of 15 to 35 percent, mainly pebbles
A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—platy or subangular blocky
Reaction—neutral or mildly alkaline
B horizon:
Hue—10YR or 7.5YR
Value—5, 6, or 7 dry, 3, 4, or 5 moist; darker values commonly in the upper part of the horizon
Chroma—2, 3, or 4
Texture—clay or gravelly clay and thin subhorizons of very gravelly clay overlying the bedrock in most pedons; thin subhorizons of gravelly clay loam in some pedons
Structure—subangular blocky; massive in some pedons
Reaction—neutral or mildly alkaline

Appian Series

The Appian series consists of very deep, well drained, moderately slowly permeable soils that formed in loamy mixed alluvium over sandy lacustrine material. Appian soils are on lake plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Natrargids

Typical pedon: Appian sandy loam, moderately saline-sodic, 0 to 2 percent slopes, in an area of Isolde-Parran-Appian association where pebbles cover approximately 5 percent of the surface:

A—0 to 4 inches; light gray (10YR 7/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine, common fine, and few coarse vesicular pores; 5 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (1 to 8 inches thick)

Btnk—4 to 9 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak medium prismatic structure; hard, firm, very sticky and plastic; few very fine roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores; 5 percent pebbles; few fine lime filaments; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (5 to 12 inches thick)

C—9 to 18 inches; light brownish gray (10YR 6/2) loamy sand, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 5 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 10 inches thick)

2C1—18 to 25 inches; light brownish gray (10YR 6/2), stratified sand and sandy loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 5 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (7 to 18 inches thick)

2C2—25 to 56 inches; light brownish gray (10YR 6/2) sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 5 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (15 to 30 inches thick)

3C—56 to 60 inches; light gray (5Y 7/2) silt loam, olive gray (5Y 5/2) moist; massive; slightly hard, friable, slightly sticky and plastic; few very fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; approximately 12 miles southeast of Lovelock, in the Carson Sink, about 1,100 feet north and 900 feet west of the southeast corner of sec. 17, T. 25 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and early spring
Soil temperature: 53 to 57 degrees F
Combined thickness of the A and Btnk horizons: 7 to 18 inches
Depth to the sandy 2C horizon: 7 to 18 inches
A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—1 or 2
Structure—weak or moderate subangular blocky or thin to thick platy; massive or single grain in some pedons

Reaction—moderately alkaline or strongly alkaline

Btnk horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 4 or 5 moist
Chroma—2, 3, or 4
Texture—dominantly clay loam, but sandy clay loam in some pedons
Content of clay—27 to 35 percent
Exchangeable sodium—20 to 50 percent
Structure—moderate or strong, fine or coarse, columnar or prismatic
Reaction—strongly alkaline or very strongly alkaline
Other features—few or common fine or medium white lime or gypsum segregations and filaments

2C horizon:
Hue—2.5Y, 10YR, or 7.5YR
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3
Texture—predominantly sand that is stratified with coarse sand, fine sand, loamy sand, loamy fine sand, fine sandy loam, or sandy loam
Content of rock fragments—as much as 75 percent pebbles in some pedons
Relict iron mottles—few to many fine to large, faint to prominent high-chroma mottles that have hue of 10YR, 7.5YR, or 5YR
Reaction—mildly alkaline to strongly alkaline

3C horizon (not in all pedons):
Depth to the horizon—40 to 60 inches
Texture—clay, silty clay, silty clay loam, or silt loam

Argenta Series

The Argenta series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in loamy alluvium derived from mixed rock sources. Argenta soils are on lake plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Argenta very fine sandy loam, 0 to 2 percent slopes, in an area where pebbles cover approximately 3 percent of the surface:

A1—0 to 1 inch; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (1 to 6 inches thick)

A2—1 to 6 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (0 to 8 inches thick)

BA—6 to 17 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; common fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (4 to 11 inches thick)

Bk—17 to 22 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; common fine lime filaments; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 6 inches thick)

Bqk1—22 to 33 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; few faint mottles, strong brown (7.5YR 5/6) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 25 percent weak, 10- to 25-millimeter durinodes; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (10 to 20 inches thick)

Bqk2—33 to 36 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; few faint mottles, strong brown (7.5YR 5/6) moist; moderate thin platy structure; slightly hard, friable, nonsticky and slightly plastic; few very fine roots; few very fine tubular pores; 10 percent weak, 10- to 25-millimeter durinodes; strongly effervescent; few fine lime filaments; strongly alkaline (pH 8.8); clear smooth boundary. (3 to 25 inches thick)

Bq—36 to 60 inches; very pale brown (10YR 8/3) gravelly sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 15 percent pebbles; 35 percent weak, 10- to 25-millimeter durinodes; strongly effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; in the northern part of Dixie Valley, about 1,200 feet west and 90 feet north of the southeast corner of sec. 21, T. 25 N., R. 38 E.

Range in Characteristics

Soil moisture: A seasonal high water table at a depth of

32 to 40 inches from February through July
Soil temperature: 47 to 52 degrees F
Depth to the Bqk horizon: 12 to 24 inches
Control section: Content of clay—8 to 18 percent; content of rock fragments—as much as 15 percent pebbles; texture—very fine sandy loam or fine sandy loam having 15 to 40 percent fine sand or coarser sand
Reaction throughout the profile: Moderately alkaline to very strongly alkaline
Relict mottles: In the upper part of some pedons
Salt and sodium: Slightly to strongly saline and strongly sodium affected to a depth of 24 to 30 inches, becoming less saline and sodic with depth; exchangeable sodium ranging from 15 to 70 percent in half or more of the upper 15 inches, decreasing with depth
Other features: Unconformable strata of loamy fine sand, fine sand, gravelly or very gravelly sand, or very coarse sand below a depth of 40 inches in some pedons

A horizon:
Value—6 to 8 dry, 4 or 5 moist
Chroma—2 or 3

Bqk horizon:
Hue—10YR or 7.5YR
Value—6 to 8 dry, 4 or 5 moist
Chroma—2 to 4
Texture—very fine sandy loam, fine sandy loam, silt loam, or loam
Other features—15 to 70 percent durinodes in a friable matrix

Atlow Series

The Atlow series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum derived from chert, rhyolitic tuff, argillite, shale, mudstone, and sands. Atlow soils are on side slopes of mountains. Slopes are 4 to 75 percent. The mean annual precipitation is about 10 inches, and the mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

Typical pedon: Atlow very gravelly loam, 30 to 50 percent slopes, in an area of Atlow-Wiskan association where pebbles cover approximately 55 percent, cobbles 5 percent, and stones 2 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine vesicular pores; 40 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)
A2—2 to 4 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; 35 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 4 inches thick)
AB—4 to 6 inches; light gray (10YR 7/2) very gravelly loam, grayish brown (10YR 5/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; 45 percent pebbles, 2 percent cobbles; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 4 inches thick)
Bt—6 to 15 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 40 percent pebbles, 2 percent cobbles; thin lime coatings on the underside of pebbles; moderately alkaline (pH 8.2); abrupt smooth boundary. (8 to 12 inches thick)
R—15 inches; argillite.

Type location: Pershing County, Nevada; in the southern part of the Tobin Range, about 500 feet east and 1,500 feet north of the projected southwest corner of sec. 21, T. 27 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist in winter and spring, dry from June through October
Soil temperature: 48 to 52 degrees F
Thickness of the solum: 14 to 20 inches
Depth to bedrock: 14 to 20 inches

A horizon:
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—5, 6, or 7 dry, 4 or 5 moist
Chroma—2 to 4
Texture—very gravelly clay loam or very cobbly clay loam
Content of clay—27 to 35 percent
Content of rock fragments—35 to 50 percent, dominantly pebbles and cobbles
Structure—angular or subangular blocky
Reaction—moderately alkaline or strongly alkaline

Carbonates—a noncalcareous matrix; thin lime coatings on the underside of rock fragments

Bango Series

The Bango series consists of very deep, well drained, moderately permeable soils that formed in mixed alluvium over lacustrine deposits. Bango soils are on lake plain terraces. Slopes are 2 to 8 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 51 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Haplic Natrargids

Typical pedon: Bango very gravelly loamy sand, 2 to 8 percent slopes, in an area of Bango-Appian association where pebbles cover approximately 40 percent and cobbles 5 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many fine vesicular pores; 50 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (2 to 7 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine and few fine tubular pores; 40 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 3 inches thick)

Btn—5 to 9 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; weak coarse prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; few thin clay films on faces of peds and lining pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 13 inches thick)

C1—9 to 14 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 8 inches thick)

C2—14 to 36 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 10 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (10 to 24 inches thick)

2C—36 to 60 inches; light gray (10YR 7/2) fine sandy loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 12 miles southeast of Lovelock, in the Carson Sink, about 1,100 feet north and 2,400 feet east of the southwest corner of sec. 27, T. 25 N., R. 32 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and early spring
Soil temperature: 53 to 57 degrees F
Depth to lacustrine material: 10 to 26 inches
Depth to the base of the natric horizon: 6 to 20 inches
Control section: Content of clay—18 to 30 percent

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Structure—moderate or strong, medium or thick platy

Btn horizon:
- Hue—7.5YR or 10YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2 to 4
- Texture—loam, clay loam, or sandy clay loam
- Content of clay—20 to 30 percent
- Structure—medium or coarse prismatic parting to weak or moderate, fine or medium subangular blocky
- Reaction—moderately alkaline or strongly alkaline
- Dendritic tufa layer—commonly discontinuous, within 10 inches of the base of the natric horizon; not in all pedons

C horizon:
- Texture—finely stratified fine sandy loam, very fine sandy loam, silt loam, loam, or silty clay
- Content of clay—18 to 30 percent
- Reaction—moderately alkaline or strongly alkaline
- Relict iron mottles—generally below a depth of 24 inches

Batan Series

The Batan series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in alluvium derived from mixed rock sources. Batan soils are on alluvial flat remnants and lake plain terraces. Slopes are 0 to 2 percent. The mean annual

precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Batan silt loam, 0 to 2 percent slopes, in an area of Batan-Wendane-Valmy association:

A—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine vesicular and few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 6 inches thick)

C—3 to 10 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; moderate thin platy structure; slightly hard, very friable, sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 19 inches thick)

Cq—10 to 30 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 20 percent 10- to 15-millimeter, hard, firm, brittle durinodes; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 16 inches thick)

Cqk—30 to 37 inches; light brownish gray (2.5Y 6/2) silt loam, grayish brown (2.5Y 5/2) moist; few fine faint iron mottles, brown (7.5YR 5/4) and dark brown (7.5YR 4/4) moist; massive; hard, friable, slightly sticky and plastic; common very fine roots; many very fine tubular pores; 25 percent 10- to 15-millimeter, hard, firm, brittle durinodes; few very fine lime filaments; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (6 to 13 inches thick)

Cqy—37 to 47 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; few fine distinct iron mottles, strong brown (7.5YR 5/6 and 5/8) moist; many fine manganese stains; massive; hard, firm, sticky and plastic; common very fine roots; many very fine tubular pores; 20 percent 10- to 15-millimeter, hard, firm, brittle durinodes; common fine gypsum crystals; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 12 inches thick)

C'q—47 to 60 inches; light brownish gray (10YR 6/2) loamy fine sand, brown (10YR 5/3) moist; few fine distinct iron mottles, strong brown (7.5YR 5/6 and 5/8) moist; many fine manganese stains; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; weak cementation; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (8 to 18 inches thick)

C'—60 to 65 inches; light gray (2.5YR 7/2) silt loam, light brownish gray (2.5Y 6/2) moist; few fine distinct iron mottles, strong brown (7.5YR 5/6 and 5/8) moist; many fine manganese stains; massive; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 2 miles north of Oreana, near the Humboldt River, about 400 feet north and 250 feet east of the southwest corner of sec. 20, T. 29 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring; a water table directly below a depth 60 inches in most years

Soil temperature: 47 to 53 degrees F

Control section: Content of clay—average of 20 to 30 percent; texture—dominantly silt loam or silty clay loam, but may be stratified fine sandy loam to silty clay

Depth to the Cq horizon: 9 to 24 inches

Salt and sodium: Salt and sodium affected in most pedons; not affected in the upper horizons in some pedons near drainageways and stream channels

Mottles: Faint or distinct iron mottles commonly in any horizon below a depth of 10 inches

Gypsum: Gypsum crystals below a depth of 20 inches in some pedons

A horizon:

- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Structure—platy or granular
- Consistence—slightly hard or hard, slightly sticky or sticky, and slightly plastic or plastic
- Reaction—moderately alkaline to very strongly alkaline
- Other features—slightly effervescent to violently effervescent

C horizon:

- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Structure—platy, angular blocky, or prismatic; massive in some pedons
- Reaction—strongly alkaline or very strongly alkaline

Other features—strongly effervescent or violently effervescent

Cq and Cqk horizons:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Cementation—20 to 40 percent durinodes; subhorizons with as much as 70 percent weak, discontinuous silica cementation in some pedons

2C horizon:
Unconformable, stratified very gravelly sands and fine sands below a depth of 50 inches in some pedons

Bedwyr Series

The Bedwyr series consists of shallow, well drained, very slowly permeable soils that formed in residuum derived from Tertiary sediments. Bedwyr soils are on side slopes of low hills. Slopes are 15 to 30 percent. The mean annual precipitation is about 4 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Typic Natrargids

Typical pedon: Bedwyr stony loam, 15 to 30 percent slopes, in an area of Bedwyr-Bedzee-Jobpeak association:

A—0 to 3 inches; pale brown (10YR 6/3) stony loam, yellowish brown (10YR 5/4) moist; strong medium platy structure parting to strong fine granular; slightly hard, friable, sticky and very plastic; few fine and medium roots; common fine vesicular and fine interstitial pores; 1 percent stones, 10 percent pebbles; violently effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary. (2 to 4 inches thick)

Btn—3 to 15 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; few medium and coarse roots; few fine and medium tubular pores; many thick clay films on faces of peds and lining pores; violently effervescent; very strongly alkaline (pH 9.4); abrupt wavy boundary. (7 to 12 inches thick)

Cr—15 inches; weathered Tertiary sediments.

Type location: Pershing County, Nevada; in the northwestern part of the Stillwater Range, about 200 feet south and 300 feet west of the northeast corner of sec. 28, T. 25 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; intermittently moist in winter and spring
Soil temperature: 53 to 57 degrees F
Depth to the base of the natric horizon: 9 to 15 inches
Depth to paralithic contact: 10 to 20 inches

A horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Reaction—mildly alkaline to very strongly alkaline

Btn horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—clay or silty clay
Content of clay—40 to 55 percent
Content of rock fragments (not in all pedons)—as much as 15 percent
Structure—moderate or strong, fine or medium prismatic
Reaction—mildly alkaline to very strongly alkaline

C horizon (not in all pedons):
Hue—10YR, 7.5YR, or 2.5Y
Value—6 or 7 dry, 5 to 7 moist
Chroma—4 or 5 dry or moist
Texture—gravelly silty clay or gravelly clay
Content of clay—45 to 60 percent
Content of rock fragments—15 to 30 percent pebbles
Reaction—moderately alkaline or strongly alkaline

Bedzee Series

The Bedzee series consists of very shallow, well drained soils that formed in residuum derived from clayey lacustrine sediments and having a thin mantle of loess. Bedzee soils are on side slopes of low hills. Slopes are 15 to 30 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Xerollic Haplargids

Typical pedon: Bedzee very stony loam, 15 to 30 percent slopes, in an area of Bedwyr-Bedzee-Jobpeak association where stones cover approximately 5 percent of the surface:

A—0 to 4 inches; light brownish gray (10YR 6/2) very stony loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine roots; common fine tubular pores; 5 percent stones, 10 percent pebbles, 10 percent cobbles; moderately

alkaline (pH 7.9); abrupt smooth boundary. (3 to 7 inches thick)

Bt—4 to 10 inches; pale brown (10YR 6/3) gravelly clay, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, very sticky and very plastic; many very fine and fine and few medium roots; common fine and medium tubular pores; 15 percent pebbles; violently effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (6 to 13 inches thick)

Cr—10 inches; weathered, mottled, clayey Tertiary sediments.

Type location: Pershing County, Nevada; in the northern part of the Stillwater Range, about 200 feet west and 700 feet north of the southeast corner of sec. 21, T. 25 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 54 to 59 degrees F
Depth to paralithic horizon: 10 to 20 inches
Control section: Content of clay—35 to 60 percent; content of rock fragments—15 to 35 percent

A horizon:
Value—4 or 5 moist
Chroma—2, 3, or 4

Bt horizon:
Chroma—3 or 4
Content of clay—40 to 60 percent
Structure—prismatic or angular blocky; massive in the lower part in some pedons
Reaction—moderately alkaline or strongly alkaline

Benin Series

The Benin series consists of very deep, well drained, very slowly permeable soils that formed in thin deposits of alluvium and loess high in content of volcanic ash over moderately fine textured and fine textured lacustrine sediments. Benin soils are on lake plain terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Typic Torriorthents

Typical pedon: Benin silt loam, 0 to 2 percent slopes, in an area of Bubus-Benin-Wendane association where pebbles cover approximately 2 percent of the surface:

A1—0 to 4 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; strong very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine, fine, and medium vesicular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 4 inches thick)

A2—4 to 9 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, sticky and plastic; common very fine and few fine and medium roots; few very fine tubular pores; common thin silica coatings on faces of peds; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (0 to 6 inches thick)

2C—9 to 19 inches; very pale brown (10YR 7/3) silty clay, brown (10YR 5/3) moist; moderate very fine subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and few fine and medium roots; few very fine tubular pores; few very thin silica coatings on faces of peds; few fine manganese stains; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 11 inches thick)

2Cy1—19 to 33 inches; very pale brown (10YR 7/4) clay, light yellowish brown (10YR 6/4) moist; weak medium prismatic structure; hard, firm, very sticky and very plastic; few very fine roots; many very fine and common fine tubular pores; 10 percent durinodes and few very thin silica coatings on faces of peds; few fine manganese stains; few fine and medium gypsum filaments; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (10 to 29 inches thick)

2Cy2—33 to 44 inches; very pale brown (10YR 7/4) clay, yellowish brown (10YR 5/4) moist; weak medium prismatic structure; hard, firm, very sticky and very plastic; few very fine roots; many very fine and few fine tubular pores; few fine faint reddish yellow (7.5YR 6/6) relict mottles; very thin silica coatings on faces of peds; many fine and common medium manganese stains; common medium gypsum filaments; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 12 inches thick)

2C′—44 to 60 inches; very pale brown (10YR 7/4) clay, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; hard, firm, very sticky and very plastic; many very fine and few fine and medium tubular pores; many fine and medium faint reddish yellow (7.5YR 6/6) relict mottles; few fine gypsum filaments; few very thin silica coatings on faces of peds; common fine manganese stains; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; in the western part of Buffalo Valley, about 400 feet east

and 700 feet south of the northwest corner of sec. 19, T. 29 N., R. 41 E.

Range in Characteristics

Soil moisture: Intermittently moist in winter and spring, dry in summer and fall
Soil temperature: 47 to 52 degrees F
Depth to lacustrine material: 1 to 10 inches
Reaction throughout the profile: Moderately alkaline to very strongly alkaline
Other features: Electrical conductivity of 4 to 32 millimhos and exchangeable sodium making up 15 to 60 percent of the volume between depths of 1 and 36 inches

A horizon:
Value—6 or 7 dry
Chroma—1 or 2
Effervescence—noneffervescent to strongly effervescent

C horizon (not in all pedons):
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Texture—silt loam or loam
Effervescence—noneffervescent to violently effervescent
Gypsum—common in some pedons

2C horizon:
Hue—10YR, 2.5Y, or 5Y
Value—7 or 8 dry, 4 to 6 moist
Chroma—2 or 3
Texture—silty clay or clay
Structure—weak to strong, medium or coarse prismatic, commonly parting to strong medium or coarse angular blocky; massive in some pedons
Other features—few to many silica coatings on faces of peds in some pedons; gypsum in some subhorizons in most pedons; as much as 10 percent durinodes in some pedons

Beoska Series

The Beoska series consists of very deep, well drained, moderately permeable soils that formed in loess over loamy and gravelly alluvium derived from mixed sources. Beoska soils are on fan piedmont remnants. Slopes are 2 to 15 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Natrargids

Typical pedon: Beoska very fine sandy loam, 2 to 8 percent slopes, in an area of Oxcorel-Weso-Beoska association where pebbles cover approximately 2 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine and common medium vesicular pores; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 7 inches thick)

A2—2 to 7 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 6 inches thick)

AB—7 to 13 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak very thin platy structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine tubular pores; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 10 inches thick)

Btn—13 to 19 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; few thin clay films on faces of peds and lining pores; 5 percent pebbles; strongly alkaline (pH 8.6); clear smooth boundary. (4 to 13 inches thick)

Btnk—19 to 25 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; common thin clay films on faces of peds and lining pores; 10 percent pebbles; common fine lime filaments; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 8 inches thick)

2Bqk—25 to 44 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, nonsticky and nonplastic; common very fine and few fine roots; few very fine tubular pores; weak, discontinuous silica cementation; lime coatings on the underside of rock fragments; 30 percent

pebbles, 2 percent cobbles; common fine and medium lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (15 to 35 inches thick)

2Bk—44 to 60 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 45 percent pebbles, 2 percent cobbles; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; in the southern part of Grass Valley, about 2,250 feet east and 2,200 feet south of the northwest corner of sec. 32, T. 32 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to the 2Bqk horizon: 16 to 26 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry
- Chroma—2 or 3
- Structure—platy or subangular blocky

Btn horizon:
- Value—3 or 4 moist, 6 or 7 dry
- Chroma—3 or 4
- Texture—silty clay loam, silt loam, or clay loam
- Content of clay—25 to 35 percent
- Content of rock fragments—as much as 15 percent, mainly pebbles
- Reaction—moderately alkaline or strongly alkaline
- Other features—secondary carbonates in some subhorizons

Bqk horizon:
- Value—7 or 8 dry, 4 to 6 moist
- Texture—very fine sandy loam, fine sandy loam, or sandy loam
- Content of clay—5 to 15 percent
- Content of rock fragments—15 to 35 percent within a depth of 40 inches, 15 to 65 percent below a depth of 40 inches, mainly pebbles
- Consistence—soft to hard, very friable to firm
- Reaction—moderately alkaline or strongly alkaline
- Other features—either 20 to 40 percent durinodes in a friable matrix or weak or strong, discontinuous silica cementation

Bezo Series

The Bezo series consists of very deep, poorly drained, moderately permeable soils that formed in lacustrine sediments. Bezo soils are on lake plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Bezo silty clay, 0 to 2 percent slopes, in an area of Yobe-Bezo-Yobe, occasionally flooded, association:

A1—0 to 1 inch; brown (10YR 4/3) silty clay, very pale brown (10YR 7/3) dry; strong medium platy structure; hard, friable, very sticky and very plastic; many very fine and few fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (1 to 5 inches thick)

A2—1 to 3 inches; brown (10YR 4/3) silty clay, very pale brown (10YR 7/3) dry; moderate thin platy structure; slightly hard, very friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 8 inches thick)

2By1—3 to 7 inches; brown (10YR 4/3) silty clay loam, pale brown (10YR 6/3) dry; weak medium granular structure; soft, very friable, sticky and plastic; common very fine roots; many very fine interstitial pores; common fine soft masses of gypsum; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (3 to 12 inches thick)

2By2—7 to 15 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct dark brown (7.5YR 4/4) iron mottles, very pale brown (10YR 7/3) dry; massive; slightly hard, friable, sticky and plastic; common very fine roots; many very fine tubular pores; common fine filaments of gypsum; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 15 inches thick)

2C—15 to 32 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct dark brown (7.5YR 4/4) iron mottles, pale brown (10YR 6/3) dry; massive; slightly hard, friable, sticky and plastic; few very fine roots; many very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 20 inches thick)

2Ck—32 to 42 inches; pale brown (10YR 6/3) silty clay loam; common fine distinct brown (7.5YR 5/4) iron mottles, white (10YR 8/2) dry; massive; slightly hard, friable, sticky and plastic; few very fine roots; many very fine and few fine tubular pores; common medium lime filaments; violently effervescent; moderately alkaline (pH 8.2); gradual smooth boundary. (0 to 15 inches thick)

3C—42 to 60 inches; pale brown (10YR 6/3) silty clay; few fine distinct yellowish brown (10YR 5/4) iron

mottles, white (10YR 8/2) dry; massive; slightly hard, friable, very sticky and very plastic; many very fine tubular pores; violently effervescent; moderately alkaline (pH 8.2).

Type location: Pershing County, Nevada; approximately 23 miles southeast of Mill City, in Buena Vista Valley, about 500 feet east and 350 feet north of the southwest corner of sec. 22, T. 29 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; saturated in some horizons between depths of 12 and 24 inches for at least 1 month during most years

Soil temperature: 53 to 56 degrees F

Depth to the By horizon: 3 to 13 inches

Control section: Content of clay—27 to 35 percent

Other features: Thin strata of silty clay in some pedons

Reaction: Strongly alkaline in the upper part of the profile, becoming moderately alkaline with depth

A horizon:
Value—4 or 5 moist, 6 or 7 dry

By horizon:
Value—4 or 5 moist, 6 or 7 dry
Chroma—3 or 4

C horizon:
Value—5 or 6 moist, 6 to 8 dry
Chroma—3 or 4 moist, 2 or 3 dry
Reaction—moderately alkaline or strongly alkaline
Carbonates—strongly effervescent or violently effervescent; lime accumulations commonly in any subhorizon
Other features—texture of silty clay below a depth of 40 inches in most pedons

Biddleman Series

The Biddleman series consists of very deep, well drained, moderately permeable soils that formed in a thin mantle of alluvium over lacustrine terrace material. Biddleman soils are on beach terraces. Slopes are 2 to 8 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Natrargids

Typical pedon: Biddleman very stony sandy loam, 2 to 8 percent slopes, in an area of Biddleman-Trocken-Biddleman, stony, association where pebbles cover approximately 20 percent and stones 5 percent of the surface:

A—0 to 3 inches; light brownish gray (10YR 6/2) very stony sandy loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine vesicular pores; 5 percent stones, 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 5 inches thick)

Btn—3 to 8 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; strong medium prismatic structure; hard, firm, sticky and plastic; many very fine roots; many very fine tubular pores; common thin clay films on faces of peds; 20 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (3 to 12 inches thick)

Btnk—8 to 13 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine tubular pores; 30 percent pebbles; few thin clay films on faces of peds; lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 5 inches thick)

2Bk—13 to 22 inches; light gray (2.5YR 7/2) very gravelly loamy fine sand, pale yellow (2.5YR 7/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 45 percent pebbles; lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (6 to 12 inches thick)

2C1—22 to 29 inches; dark grayish brown (2.5Y 4/2) very gravelly sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; few very fine interstitial pores; 50 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (0 to 8 inches thick)

2C2—29 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sand, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine tubular pores; few weakly silica-cemented fragments; 50 percent pebbles, 10 percent cobbles; lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; approximately 20 miles southeast of Lovelock, in Buena Vista Valley, about 1,500 feet east and 700 feet north of the southwest corner of sec. 10, T. 25 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry; intermittently moist in winter and spring

Soil temperature: 53 to 55 degrees F
Combined thickness of the A and Btn horizons: 8 to 17 inches
Control section: Content of clay—average of 7 to 15 percent where the base of the Bt horizon is within a depth of 10 inches; content of rock fragments, mainly pebbles—average of 50 to 70 percent but ranging from 20 to 80 percent in subhorizons
Reaction throughout the profile: Moderately alkaline to very strongly alkaline
Other features: Discontinuous, weakly cemented to strongly cemented lithoid tufa occurring sporadically along beach terraces, generally below a depth of 36 inches but locally as shallow as 24 inches

A horizon:
Hue—10YR or 2.5Y
Value—3, 4, or 5 moist
Structure—weak or moderate, very thin to thick platy; granular in some pedons

Btn horizon:
Hue—10YR or 2.5Y
Value—3, 4, or 5 moist
Chroma—2, 3, or 4
Texture—loam, sandy clay loam, or clay loam that has common thin subhorizons of sandy loam
Content of clay—20 to 30 percent
Content of rock fragments—average of 20 to 35 percent, mainly pebbles
Exchangeable sodium—15 to 25 percent
Other features—lime coatings on the underside of rock fragments in the Btnk horizon in some pedons

2C horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4
Texture—loamy fine sand, loamy coarse sand, or sand
Content of clay—2 to 10 percent
Content of rock fragments—average of 60 to 80 percent, mainly pebbles
Other features—discontinuous, weakly cemented to strongly cemented lithoid tufa below a depth of 24 inches

Blackhawk Series

The Blackhawk series consists of shallow, well drained, moderately permeable soils that formed in loess and mixed alluvium. Blackhawk soils are on fan piedmont remnants, fan aprons, and partial ballenas. Slopes are 0 to 50 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Entic Durorthids

Typical pedon: Blackhawk silt loam, 0 to 2 percent slopes:

A—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; few roots; many fine and medium vesicular pores; polygonal cracks 1 to 1½ inches deep and 3 to 6 inches apart on the surface; strongly alkaline (pH 8.6); abrupt smooth boundary. (2 to 8 inches thick)

Bw—3 to 14 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium and fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine roots; many very fine and fine interstitial pores; moderately alkaline (pH 8.3); abrupt smooth boundary. (6 to 15 inches thick)

Bqm—14 to 16 inches; light brownish gray (10YR 6/2), strongly silica-cemented duripan, dark grayish brown (10YR 4/2) moist; strong thin platy structure; very hard, very firm; few fine roots; many very fine interstitial pores; common thin silica films coating pores and bridging sand grains and discontinuous silica-cemented laminae; very strongly alkaline (pH 8.8); abrupt smooth boundary. (2 to 5 inches thick)

Bqk—16 to 21 inches; pale brown (10YR 6/3) loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure parting to weak fine angular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 30 percent very hard, firm, brittle durinodes; a noneffervescent matrix; strongly effervescent in spots; few fine lime filaments and coatings on durinodes; strongly alkaline (pH 9.0); abrupt smooth boundary. (0 to 21 inches thick)

Bqkm—21 to 30 inches; pale brown (10YR 6/3), strongly silica-cemented duripan, dark grayish brown (10YR 4/2) moist; weak and moderate thick platy structure; extremely hard, extremely firm; few very fine and fine roots only in seams and between plates; few fine interstitial pores; many fine silica films lining pores and bridging sand grains and common moderately thick, discontinuous silica laminae; white (10YR 8/2) lime coatings on most silica films, mainly on laminae; violently effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary. (0 to 10 inches thick)

2Bqk—30 to 48 inches; very pale brown (10YR 7/3) coarse sand, brown (10YR 5/3) moist; massive;

slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few fine and many very fine interstitial pores; 30 percent hard, firm, brittle durinodes; violently effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (0 to 20 inches thick)

2C—48 to 60 inches; brown (10YR 5/3) very gravelly coarse sand, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 40 percent pebbles; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 21 miles south of Winnemucca, about 600 feet east and 1,300 feet south of the north quarter corner of sec. 3, T. 32 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and early spring

Soil temperature: 47 to 54 degrees F

Depth to a duripan: 14 to 20 inches

Control section: Content of clay—average of 5 to 10 percent; content of rock fragments—as much as 30 percent, mainly pebbles; content of silt and very fine sand—65 to 80 percent

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate, very thin to thick platy
- Reaction—mildly alkaline to strongly alkaline

Bw horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—silt loam, loam, or very fine sandy loam
- Content of clay—average of 5 to 10 percent
- Content of rock fragments—0 to 30 percent, mainly pebbles
- Structure—weak or moderate, thin to thick, platy or subangular blocky; massive in some pedons
- Reaction—mildly alkaline to strongly alkaline

Bq, Bk, and C horizons:
- Hue—10YR or 2.5Y
- Value—5 to 7 dry, 4 to 6 moist
- Chroma—2 or 3
- Structure—weak to strong, thin to thick platy; massive in some pedons

Duripan:
- Consistence—very hard or extremely hard
- Reaction—moderately alkaline to very strongly alkaline
- Silica cementation—the duripan generally consisting of two or more strongly cemented layers interbedded with weakly silica-cemented material or strata with a friable matrix containing durinodes

Bk and Bqk horizons:
- Texture—stratified loam, gravelly coarse sandy loam, or gravelly coarse sand, directly below the upper duripan in most pedons

2Bqk, 2Bk, and 2C horizons:
- Texture—unconformable strata of very gravelly sand, extremely gravelly sand, coarse sand, loamy coarse sand, or sandy loam, commonly below a depth of 30 inches
- Other features—strata of clay below a depth of 30 inches in some pedons

Bliss Series

The Bliss series consists of moderately deep, well drained, moderately permeable soils that formed in mixed alluvium. Bliss soils are on fan piedmont remnants and partial ballenas. Slopes are 8 to 30 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Haploxerollic Durorthids

Typical pedon: Bliss fine sandy loam, 2 to 8 percent slopes; in Humboldt County, east part:

A—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure; soft, friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; mildly alkaline (pH 7.5); abrupt wavy boundary. (2 to 6 inches thick)

Bw1—4 to 13 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; mildly alkaline (pH 7.5); clear wavy boundary. (6 to 10 inches thick)

Bw2—13 to 22 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; common very fine and few fine and medium roots; many very fine interstitial pores; mostly noneffervescent but slightly effervescent in

some spots; moderately alkaline (pH 8.4); clear wavy boundary. (8 to 12 inches thick)

Bk—22 to 28 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; common very fine and few fine and medium roots; many very fine interstitial pores; slightly effervescent; strongly alkaline (pH 9.0); abrupt wavy boundary. (4 to 8 inches thick)

Bqkm—28 to 45 inches; very pale brown (10YR 7/3), strongly cemented duripan, brown (10YR 5/3) moist; moderate thick platy structure; very hard, very firm; common fine faint white (10YR 8/2) lime mottles; roots matted between plates; strongly effervescent; strongly alkaline (pH 9.0).

Type location: Humboldt County, Nevada; approximately 4 miles northeast of Winnemucca, about 800 feet west and 600 feet south of the northeast corner of sec. 14, T. 36 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 48 to 53 degrees F

Depth to a duripan: 20 to 36 inches

Control section: Content of clay—5 to 15 percent; texture—very fine sandy loam, silt loam, or fine sandy loam containing 15 to 40 percent fine sand or coarser sand; content of rock fragments—as much as 15 percent

A horizon:
- Chroma—2 or 3
- Reaction—neutral or mildly alkaline

Bw horizon:
- Content of clay—8 to 16 percent
- Content of rock fragments—as much as 15 percent
- Reaction—neutral to moderately alkaline

Bk horizon:
- Reaction—strongly alkaline or very strongly alkaline
- Calcium carbonate equivalent—as much as 15 percent

Bqkm horizon:
- Structure—platy; massive in some pedons
- Other features—pebbles underlying the duripan in some pedons

Bluewing Series

The Bluewing series consists of very deep, excessively drained, very rapidly permeable soils that formed in alluvium derived from mixed rock sources. Bluewing soils are on inset fans, alluvial flats, fan collars, and side slopes of fan piedmont remnants. Slopes are 0 to 30 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Sandy-skeletal, mixed, mesic Typic Torriorthents

Typical pedon: Bluewing very gravelly loam, 0 to 2 percent slopes, in an area of Genegraf-Chilper-Bluewing association where pebbles cover approximately 30 percent, cobbles 10 percent, and stones 2 percent of the surface:

A—0 to 5 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; 40 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 9 inches thick)

Bk1—5 to 13 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; 40 percent pebbles, 5 percent cobbles; strongly effervescent; lime coatings on the underside of pebbles; strongly alkaline (pH 8.6); clear smooth boundary. (5 to 25 inches thick)

Bk2—13 to 27 inches; very pale brown (10YR 7/3) very gravelly loamy coarse sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 45 percent pebbles, 5 percent cobbles, 5 percent stones; strongly effervescent; lime coatings on the underside of rock fragments; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 24 inches thick)

Bk3—27 to 42 inches; very pale brown (10YR 7/3) extremely gravelly loamy coarse sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 60 percent pebbles, 10 percent cobbles, 2 percent stones; violently effervescent; lime coatings on all sides of rock fragments; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 16 inches thick)

Bk4—42 to 60 inches; very pale brown (10YR 8/3) extremely gravelly loamy coarse sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 50 percent pebbles, 10 percent cobbles, 5 percent stones; violently effervescent; lime coatings on all sides of rock fragments; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; in the eastern part of Buena Vista Valley, about 400 feet

south and 900 feet west of the northeast corner of sec. 16, T. 30 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; intermittently moist in winter and early spring
Soil temperature: 53 to 59 degrees F
Reaction throughout the profile: Mildly alkaline to strongly alkaline

A horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4
Structure—platy or single grain
Consistence—loose, soft, or slightly hard
Other features—noneffervescent to violently effervescent

Bk horizon:
Hue—10YR or 2.5Y
Value—5 to 8 dry, 3 to 5 moist
Chroma—2 to 4
Texture—dominantly loamy coarse sand or coarse sand but may include strata ranging from loamy sand to loam
Content of clay—average of 4 to 8 percent
Content of rock fragments—50 to 80 percent, mainly pebbles ¾ inch to 1¼ inches in diameter but as much as 25 percent cobbles and stones
Structure—massive or single grain

Bojo Series

The Bojo series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum derived from metamorphic or volcanic rocks. Bojo soils are on crests and side slopes of mountains and foothills. Slopes are 4 to 50 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic Lithic Haplargids

Typical pedon: Bojo very cobbly loam, 30 to 50 percent slopes, in an area of Bojo, steep-Hoot-Bojo association where pebbles cover approximately 25 percent, cobbles 20 percent, and stones 5 percent of the surface:

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and common fine and medium vesicular pores; 20 percent pebbles, 15 percent cobbles, 2 percent stones; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 5 inches thick)

Bt—3 to 10 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 10 percent pebbles, 5 percent cobbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 10 inches thick)

R—10 inches; unweathered andesite.

Type location: Pershing County, Nevada; in the southern part of the Tobin Range, about 100 feet west and 1,800 feet south of the northeast corner of sec. 5, T. 26 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist in winter and spring, dry from June through October
Soil temperature: 47 to 52 degrees F
Depth to bedrock: 5 to 14 inches
Control section: Content of clay—18 to 35 percent; content of rock fragments—15 to 35 percent; reaction—mildly alkaline or moderately alkaline

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2, 3, or 4

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—2, 3, or 4
Content of rock fragments—10 to 25 percent, dominantly pebbles
Texture—loam, clay loam, sandy clay loam, gravelly clay loam, or gravelly loam
Content of clay—25 to 35 percent
Other features—slightly calcareous in some pedons

Bojo Variant

The Bojo Variant consists of shallow, well drained, slowly permeable soils that formed in residuum derived from welded and nonwelded, siliceous ash-flow tuff. Bojo Variant soils are on side slopes of low foothills. Slopes are 15 to 30 percent. The mean annual precipitation is 6 to 10 inches, and the mean annual temperature is 47 to 49 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Typic Haplargids

Typical pedon: Bojo Variant very cobbly loam, 15 to 30 percent slopes, in an area of Bojo Variant-Schamp-Trunk association where pebbles cover approximately

25 percent, cobbles 25 percent, and stones 5 percent of the surface:

A—0 to 5 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine vesicular pores; 25 percent pebbles, 25 percent cobbles, 5 percent stones; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 6 inches thick)

Bt—5 to 9 inches; pale brown (10YR 6/3) very gravelly loam, dark 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 fine tubular pores; 35 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds and lining pores; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 6 inches thick)

Btk—9 to 18 inches; pinkish gray (7.5YR 6/2) clay, dark brown (7.5YR 4/2) moist; moderate fine prismatic structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; 10 percent pebbles, 2 percent cobbles; continuous, thin clay films on faces of peds and lining pores; common fine lime filaments; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (6 to 10 inches thick)

Cr—18 inches; weathered tuff.

Type location: Pershing County, Nevada; in the Tobin Range, about 1,200 feet east and 800 feet south of the northwest corner of sec. 35, T. 29 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; intermittently moist in winter and spring

Soil temperature: 48 to 53 degrees F

Depth to paralithic contact: 14 to 20 inches

Control section: Content of clay—35 to 50 percent; content of rock fragments—15 to 35 percent

Bt horizon:

Texture—very gravelly loam or very gravelly clay loam; commonly clay in the lower part

Boton Series

The Boton series consists of very deep, well drained, moderately slowly permeable soils that formed in a thin layer of loess and alluvium influenced by volcanic ash and in the underlying lacustrine sediments. Boton soils are on lake plain terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Boton silt loam, 0 to 2 percent slopes, in an area of Boton-Playas association:

A1—0 to 3 inches, light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine vesicular pores; violently effervescent (less than 1 percent calcium carbonate equivalent); strongly alkaline (pH 8.6); abrupt smooth boundary. (2 to 6 inches thick)

A2—3 to 10 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; strong thin platy structure; hard, very friable, slightly sticky and slightly plastic; common very fine roots; many fine and medium vesicular pores; violently effervescent (less than 1 percent calcium carbonate equivalent); strongly alkaline (pH 8.8); clear smooth boundary. (4 to 14 inches thick)

Bq—10 to 12 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; strong thin platy structure; hard, friable, slightly sticky and plastic; common very fine roots; common fine and medium tubular pores; 20 percent durinodes; violently effervescent (10 percent calcium carbonate equivalent); strongly alkaline (pH 9.0); clear smooth boundary. (0 to 6 inches thick)

2Bqk1—12 to 18 inches; light gray (2.5Y 7/2) silt loam stratified with thin lenses of silty clay loam and very fine sandy loam; light brownish gray (2.5Y 6/2) moist; common fine manganese stains on faces of peds and common fine distinct dark yellowish brown (10YR 4/4) relict mottles; prominent thin platelike bedding planes; slightly hard, very friable, sticky and plastic; many very fine and common fine roots; many fine tubular pores; 20 percent durinodes; few fine lime filaments; violently effervescent (17 percent calcium carbonate equivalent); very strongly alkaline (pH 9.2); abrupt smooth boundary. (5 to 12 inches thick)

2Bqk2—18 to 27 inches; light gray (2.5Y 7/2) silt loam stratified with thin lenses of silty clay loam and very fine sandy loam; light brownish gray (2.5Y 6/2) moist; few fine manganese stains and many coarse distinct dark brown (7.5YR 4/4) relict mottles; massive; hard, friable, sticky and plastic; few very fine roots; few fine tubular pores; 50 percent durinodes; few fine lime filaments; violently effervescent (22 percent calcium carbonate

equivalent); strongly alkaline (pH 8.8); clear smooth boundary. (6 to 15 inches thick)

2Bk1—27 to 32 inches; light gray (2.5Y 7/2) silt loam stratified with thin lenses of silty clay loam and very fine sandy loam; light brownish gray (2.5Y 6/2) moist; few fine manganese stains on faces of peds and many coarse distinct dark brown (7.5YR 4/4) relict mottles; weak thin platelike bedding planes; slightly hard, very friable, sticky and plastic; few very fine roots; many fine tubular pores; few fine lime filaments; violently effervescent (20 percent calcium carbonate equivalent); strongly alkaline (pH 8.8); clear smooth boundary. (4 to 18 inches thick)

2Bk2—32 to 60 inches; light brownish gray (2.5Y 6/2) silt loam stratified with thin lenses of silty clay loam and very fine sandy loam; light brownish gray (2.5Y 6/2) moist; few fine manganese stains on faces of peds and common fine distinct dark yellowish brown (10YR 4/4) relict mottles; weak thin platelike bedding planes; slightly hard, very friable, sticky and plastic; few very fine roots; common fine tubular pores; few fine and medium lime filaments; few fine soft masses of gypsum; violently effervescent (20 percent calcium carbonate equivalent); strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; approximately 5 miles south of Jungo, in an unsurveyed area about 13,000 feet east and 5,000 feet north of the southeast corner of sec. 1, T. 34 N., R. 31 E. (40 degrees, 50 minutes, 22 seconds north latitude and 118 degrees, 25 minutes, 6 seconds west longitude).

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist for short periods in winter and spring, dry from May through October

Soil temperature: 53 to 57 degrees F

Depth to lacustrine material: 10 to 20 inches

Depth to the Bq or Bqk horizon: 8 to 20 inches

Control section: Content of clay—18 to 27 percent; texture—averages silt loam that has common very thin strata of silty clay loam and very fine sandy loam

Reaction throughout the profile: Strongly alkaline or very strongly alkaline

Relict iron mottles: Common or many, faint or distinct, and fine to coarse in the lacustrine sediments

Other features: Subhorizons that commonly have thin or very thin varves or lenses in the lacustrine sediments

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—platy or granular

Bq and 2Bqk horizons:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 5 or 6 moist
- Chroma—2 or 3
- Structure—platelike bedding planes; massive in some pedons
- Cementation—20 to 60 percent weakly or strongly cemented durinodes in a friable matrix
- Calcium carbonate equivalent—average of 5 to 20 percent
- Salinity—moderate or strong
- Exchangeable sodium—45 to 70 percent

2Bk horizon:
- Value—6 or 7 dry, 5 or 6 moist
- Chroma—2 or 3
- Structure—platelike bedding planes; massive in some pedons
- Calcium carbonate equivalent—average of 5 to 20 percent
- Salinity—strong
- Exchangeable sodium—55 to 70 percent
- Gypsum filaments—do not occur in subhorizons of some pedons

Bubus Series

The Bubus series consists of very deep, well drained, moderately permeable soils that formed in alluvium and lacustrine sediments derived from mixed rock sources high in content of pyroclastic material. Bubus soils are on alluvial flat remnants and lake plain terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Bubus very fine sandy loam, 0 to 2 percent slopes, in an area where pebbles cover approximately 2 percent of the surface:

A—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; strong thick platy structure parting to weak very thin platy; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 10 inches thick)

C1—2 to 6 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; strong thin platy structure; soft, very friable, slightly sticky and

slightly plastic; common fine and few very fine roots; common very fine and few fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 11 inches thick)

C2—6 to 13 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine and few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (5 to 13 inches thick)

Cq—13 to 26 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 2 percent fine pebbles; 30 percent durinodes; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (0 to 13 inches thick)

Cqk—26 to 37 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; few very fine tubular pores; 2 percent fine pebbles; 25 percent durinodes; violently effervescent; few fine lime filaments; moderately alkaline (pH 8.4); clear smooth boundary. (7 to 16 inches thick)

C'1—37 to 53 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and coarse roots; few very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 20 inches thick)

C'2—53 to 60 inches; light gray (10YR 7/2) fine sandy loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 2 miles west of Imlay, about 800 feet north and 300 feet east of the southwest corner of sec. 7, T. 32 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 47 to 53 degrees F

Control section: Content of clay—10 to 15 percent; content of rock fragments—0 to 5 percent pebbles

Other features: Faint or distinct iron mottles and gypsum segregations commonly in horizons below a depth of 10 inches

Salt and sodium: Strongly salt and sodium affected throughout the profile in most pedons but only moderately or slightly affected in the upper horizons in some pedons

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2, 3, or 4
- Structure—platy or granular
- Consistence—nonsticky or slightly sticky and nonplastic or slightly plastic
- Reaction—moderately alkaline to very strongly alkaline
- Effervescence—slightly effervescent to violently effervescent

C horizon:
- Value—6 or 7 dry, 4 to 6 moist
- Chroma—2 to 4
- Texture—loam, silt loam, very fine sandy loam, fine sandy loam, or sandy loam (dominantly very fine sandy loam)
- Structure—platy; massive in some pedons
- Reaction—moderately alkaline to very strongly alkaline, commonly decreasing in alkalinity with depth
- Effervescence—strongly effervescent to violently effervescent

Cqk horizon:
- Reaction—moderately alkaline to very strongly alkaline
- Other features—20 to 70 percent durinodes

2C horizon (not in all pedons):
- Texture—stratified sand and gravel below a depth of 40 inches

Burnborough Series

The Burnborough series consists of very deep, well drained, moderately permeable soils that formed in residuum and colluvium weathered dominantly from andesitic and rhyolytic rocks. Burnborough soils are on side slopes of mountains. Slopes are 15 to 75 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Argixerolls

Typical pedon: Burnborough very gravelly loam, 50 to 75 percent slopes, in an area of Burrita-Burnborough association where pebbles cover approximately 50 percent and cobbles 5 percent of the surface:

A1—0 to 3 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; strong very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine and common medium vesicular pores; 35 percent pebbles, 2 percent

cobbles; neutral (pH 6.8); clear smooth boundary. (3 to 8 inches thick)

A2—3 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; few very fine tubular pores; 35 percent pebbles; neutral (pH 6.8); clear smooth boundary. (3 to 8 inches thick)

Bt1—7 to 13 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, sticky and plastic; common very fine and fine and few medium roots; common very fine and few fine tubular pores; common thin clay films lining pores; 35 percent pebbles; neutral (pH 7.2); clear smooth boundary. (0 to 10 inches thick)

Bt2—13 to 23 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine and few medium roots; few very fine and fine tubular pores; 35 percent pebbles, 10 percent cobbles; common thin clay films on faces of peds and lining pores; neutral (pH 7.2); clear smooth boundary. (8 to 16 inches thick)

Bt3—23 to 60 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium and few coarse roots; few very fine tubular pores; 40 percent pebbles, 15 percent cobbles; continuous, thin clay films on faces of peds and lining pores; neutral (pH 7.2).

Type location: Pershing County, Nevada; in the Fish Creek Mountains, near Jersey Valley, about 1,300 feet east and 900 feet north of the southwest corner of sec. 14, T. 27 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist in winter and spring, dry in summer and fall; depth of wetting exceeding 30 inches in most years

Soil temperature: 42 to 46 degrees F

Depth to bedrock: 60 to 80 inches

Mollic epipedon: 10 to 20 inches thick; includes the Bt1 horizon

Reaction throughout the profile: Slightly acid or neutral

A horizon:
- Value—4 or 5 dry, 2 or 3 moist
- Chroma—2 or 3

Bt1 horizon:
- Value—4 or 5 dry
- Chroma—2 or 3
- Texture—very gravelly sandy loam or very gravelly loam
- Content of clay—18 to 25 percent
- Content of rock fragments—35 to 50 percent, mainly pebbles

Bt2 and Bt3 horizons:
- Value—5 or 6 dry, 3, 4, or 5 moist
- Chroma—3 or 4 dry
- Texture—very gravelly loam or very gravelly clay loam
- Content of clay—18 to 35 percent
- Content of rock fragments—35 to 60 percent, mainly pebbles

C horizon (not in all pedons):
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—2 to 6
- Texture—loam to loamy sand
- Content of rock fragments—35 to 75 percent, mainly pebbles

Burrita Series

The Burrita series consists of shallow, well drained, slowly permeable soils that formed in residuum and colluvium derived from metamorphic and volcanic rocks. Burrita soils are on crests and side slopes of mountains and hills. Slopes are 4 to 75 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids

Typical pedon: Burrita very cobbly loam, 30 to 50 percent slopes, in an area of Hoot-Burrita-Bojo association where pebbles cover approximately 25 percent, cobbles 15 percent, and stones 5 percent of the surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; strong very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 15 percent pebbles, 15 percent cobbles, 5 percent stones; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)

A2—2 to 4 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 7 inches thick)

BA—4 to 8 inches; pale brown (10YR 6/3) gravelly

loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine roots; common fine tubular pores; 20 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.4); gradual smooth boundary. (0 to 4 inches thick)

Bt—8 to 17 inches; dark brown (7.5YR 4/4) very gravelly clay, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; 45 percent pebbles, 5 percent cobbles; many thin clay films on faces of peds and lining pores; slightly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (7 to 14 inches thick)

2R—17 inches; unweathered andesite; thin lime coatings on the surface of the bedrock.

Type location: Pershing County, Nevada; in the southern part of the Tobin Range, about 2,300 feet west and 700 feet south of the northeast corner of sec. 3, T. 26 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 50 degrees F
Depth to bedrock: 14 to 20 inches
Control section: Content of clay—35 to 50 percent; content of rock fragments—35 to 60 percent, when mixed, mainly pebbles, cobbles, or stones
Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2, 3, or 4
Consistence—soft or slightly hard

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6
Texture—very gravelly clay, very cobbly clay, very stony clay, very gravelly clay loam, very cobbly clay loam, or very stony clay loam
Structure—subangular or angular blocky

Chen Series

The Chen series consists of shallow, well drained, very slowly permeable soils that formed in residuum and colluvium weathered from rhyolite, andesite, or tuff and influenced by loess high in content of volcanic ash. Chen soils are on crests and side slopes of plateaus and buttes. Slopes are 4 to 15 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Chen very stony loam, 4 to 15 percent slopes, in an area of Alyan-Chen-Rock outcrop association where stones cover 5 percent, cobbles 10 percent, and pebbles 15 percent of the surface:

A1—0 to 2 inches; grayish brown (10YR 5/2) very stony loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine vesicular pores; 10 percent pebbles, 10 percent cobbles, 5 percent stones; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 6 inches thick)

A2—2 to 10 inches; brown (10YR 5/3) stony loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 10 percent stones, 5 percent pebbles, 1 percent cobbles; mildly alkaline (pH 7.6); abrupt smooth boundary. (2 to 8 inches thick)

Bt1—10 to 15 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; common brown (10YR 5/3) stains on faces of peds, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 35 percent pebbles, 10 percent cobbles; continuous pressure faces on peds; neutral (pH 6.8); clear smooth boundary. (0 to 5 inches thick)

Bt2—15 to 19 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; continuous pressure faces on peds; 40 percent pebbles, 10 percent cobbles; neutral (pH 7.0); abrupt smooth boundary. (4 to 7 inches thick)

2R—19 inches; unweathered andesite.

Type location: Pershing County, Nevada; approximately 32 miles south of Winnemucca, in the East Range, about 1,585 feet east and 1,848 feet north of the southwest corner of sec. 5, T. 30 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 43 to 47 degrees

Mollic epipedon: 7 to 15 inches thick; generally includes the upper part of the argillic horizon
Depth to bedrock: 12 to 20 inches
Reaction throughout the profile: Slightly acid to mildly alkaline

A horizon:
- Value—4 to 6 dry (less than 5.5 when the uppermost 7 inches is mixed), 2 or 3 moist
- Chroma—2 or 3
- Structure—weak or moderate, medium or thin platy or very fine to medium, granular or subangular blocky

Bt horizon:
- Hue—7.5YR or 10YR; 5YR commonly in areas where high iron concentrations are in the parent material
- Value—4 or 5 dry, 3 or 4 moist
- Chroma—2 to 4
- Texture—very gravelly clay, extremely gravelly clay, very cobbly clay, or extremely cobbly clay; in some pedons a thin Bt horizon of very gravelly clay loam that has 35 to 40 percent clay
- Content of clay—40 to 55 percent
- Content of rock fragments—40 to 65 percent pebbles and cobbles, generally increasing in amount with depth
- Structure—weak to strong, fine or medium, angular or subangular blocky or platy

Chiara Series

The Chiara series consists of shallow, well drained, moderately permeable soils that formed in alluvium derived from mixed rock sources and in a mantle of loess high in content of volcanic ash. Chiara soils are on fan piedmont remnants. Slopes are 2 to 30 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durorthids

Typical pedon: Chiara fine sandy loam, 2 to 8 percent slopes, in an area of Bliss-Chiara association:

A1—0 to 2 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; many very fine vesicular pores; neutral (pH 7.0); clear smooth boundary. (2 to 3 inches thick)

A2—2 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular pores; neutral (pH 7.0); clear smooth boundary. (1 to 5 inches thick)

Bw—4 to 10 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few medium roots; common very fine tubular pores; mildly alkaline (pH 7.4); clear smooth boundary. (4 to 7 inches thick)

Bqk—10 to 15 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; few very fine tubular pores; 20 percent durinodes; slightly effervescent; moderately alkaline (pH 8.2); abrupt wavy boundary. (5 to 10 inches thick)

2Bqkm—15 to 21 inches; light gray (10YR 7/2), indurated duripan, pale brown (10YR 6/3) moist; massive; extremely hard, extremely firm; violently effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 5 miles east of Mill City, near Dun Glen Canyon, about 2,000 feet south and 1,000 feet west of the northeast corner of sec. 17, T. 33 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 53 degrees F
Control section: Content of clay—5 to 18 percent; texture—very fine sandy loam, loam, or silt loam having 70 to 85 percent silt and very fine sand; content of rock fragments—when mixed, as much as 5 percent, mainly pebbles, but 4 to 25 percent, mainly duripan fragments, in thin subhorizons in some pedons
Depth to a duripan: 10 to 20 inches
Depth to lime: 7 to 15 inches
Other features: A stratified gravelly and sandy substratum below a depth of 40 inches in some pedons

A horizon:
- Value—3 or 4 moist
- Chroma—2 or 3
- Structure—weak or moderate, thin to thick, platy or granular
- Reaction—neutral to moderately alkaline

Bw horizon:
- Value—6 or 7 dry, 3 to 5 moist
- Chroma—3 or 4
- Structure—weak to strong, fine to coarse subangular blocky or weak prismatic
- Reaction—mildly alkaline to strongly alkaline

Bqk horizon:
Reaction—moderately alkaline or strongly alkaline
Cementation—20 to 60 percent weakly cemented and brittle durinodes 0.3 to 1.0 inch in diameter

Bqkm horizon:
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 to 4
Structure—massive or weak or moderate thick platy

Chilper Series

The Chilper series consists of very deep, well drained, very slowly permeable soils that formed in loess over alluvium derived from mixed rock sources. Chilper soils are on side slopes of fan piedmont remnants. Slopes are 2 to 50 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Duric Natrargids

Typical pedon: Chilper cobbly very fine sandy loam, 2 to 8 percent slopes, in an area of Chilper-Trocken-Jerval association where pebbles cover approximately 10 percent and cobbles 7 percent of the surface:

A1—0 to 3 inches; light gray (10YR 7/2) cobbly very fine sandy loam, grayish brown (10YR 5/2) moist; moderate thick platy structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine and few fine roots; many fine and medium vesicular pores; 10 percent pebbles, 7 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 3 inches thick)

A2—3 to 7 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots; many very fine and fine tubular pores; 2 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 4 inches thick)

AB—7 to 13 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine to medium roots; many very fine and fine tubular pores; 2 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 5 inches thick)

Btnk—13 to 22 inches; light brown (7.5YR 6/4) clay loam, dark brown (7.5YR 4/4) moist; strong fine prismatic structure; hard, firm, sticky and plastic; common very fine and fine roots; few very fine tubular pores; 5 percent pebbles; many thin clay films on faces of peds and lining pores; common fine lime filaments; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (5 to 12 inches thick)

Btnky—22 to 29 inches; light brown (7.5YR 6/4) clay loam, dark brown (7.5YR 4/4) moist; strong fine prismatic structure; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 10 percent pebbles; many thin clay films on faces of peds and lining pores; many fine lime and gypsum seams; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (3 to 12 inches thick)

Bqk—29 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, slightly sticky and nonplastic; few very fine roots; few very fine tubular pores; 70 percent pebbles, 2 percent cobbles; weak, continuous silica and lime cementation; violently effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; approximately 20 miles southeast of Lovelock, near Buena Vista Hill, about 1,900 feet east and 800 feet north of the southwest corner of sec. 23, T. 25 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and early spring
Soil temperature: 53 to 59 degrees F
Depth to a weakly cemented horizon and the base of the argillic horizon: 20 to 35 inches
Control section: Content of clay—35 to 50 percent; content of rock fragments—0 to 15 percent, mainly pebbles; exchangeable sodium—35 to 60 percent
Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Other features—noneffervescent in some pedons

Btn horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6
Texture—clay loam or clay
Other features—a strongly effervescent matrix; segregated lime throughout and gypsum in the lower subhorizons

Bqk horizon:
Value—5, 6, or 7 dry, 4, 5, or 6 moist
Chroma—3 or 4
Content of rock fragments—60 to 80 percent

Cementation—weak, continuous lime and silica cementation with a minimum thickness of 6 inches in at least one subhorizon within a depth of 40 inches

Chumall Series

The Chumall series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in lacustrine deposits derived from mixed sources. Chumall soils are on beach plain lagoons. Slopes are 0 to 2 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Chumall silt loam, 0 to 2 percent slopes, in an area of Mazuma-Toulon-Chumall association:

A1—0 to 2 inches; light gray (10YR 7/2) silt loam, grayish brown (2.5Y 5/2) moist; strong thin platy structure; very hard, friable, sticky and plastic; few very fine roots; many very fine and fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 5 inches thick)

A2—2 to 7 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; strong thin platy structure; hard, friable, sticky and plastic; few very fine roots; many very fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 6 inches thick)

Bw—7 to 14 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; weak fine prismatic structure parting to moderate thin platy; hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; very thin silica coatings on faces of peds; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (6 to 18 inches thick)

2C1—14 to 23 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; few fine distinct relict mottles, brown (7.5YR 4/4) moist; moderate thin platy bedding planes; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine tubular pores; few fine rounded relict soft lime masses embedded in plates; violently effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (6 to 20 inches thick)

2C2—23 to 60 inches; light brownish gray (2.5Y 6/2) silt loam, grayish brown (2.5Y 5/2) moist; few fine distinct relict mottles, brown (7.5YR 4/4) moist; common relict manganese stains; moderate thin platy bedding planes; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; few fine gypsum crystals; violently effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; along the northern part of the Carson Sink, about 700 feet west and 400 feet north of the southeast corner of sec. 3, T. 25 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring

Soil temperature: 53 to 57 degrees F

Depth to lacustrine deposits: 10 to 20 inches

Control section: Content of clay—18 to 27 percent; reaction—moderately alkaline to very strongly alkaline, becoming more alkaline with depth

Other features: Relict mottles or manganese stains

Exchangeable sodium: More than 50 percent in the Bw and C horizons

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Reaction—moderately alkaline or strongly alkaline

Bw horizon:
- Hue—10YR or 2.5Y
- Value—5, 6, or 7 dry, 3, 4, or 5 moist
- Chroma—3 or 4
- Consistence—very hard or hard, friable or firm (but not both hard and firm)
- Reaction—strongly alkaline or very strongly alkaline

2C horizon:
- Hue—10YR, 2.5Y, or 5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—dominantly silt loam that has thin strata of silty clay loam
- Structure—platy bedding planes; massive in some pedons
- Reaction—strongly alkaline or very strongly alkaline
- Segregated lime—a few relict soft masses of lime commonly in any part of the horizon
- Other features—silty clay below a depth of 40 inches in some pedons; a substratum of fine sand in other pedons

Cleavage Series

The Cleavage series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum or colluvium derived from rhyolitic flow and

other igneous rocks. Cleavage soils are on crests and shoulders of mountains. Slopes are 4 to 50 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Argixerolls

Typical pedon: Cleavage very gravelly loam, 4 to 15 percent slopes, in an area of Burnborough-Cleavage-Reluctan association where pebbles cover approximately 15 percent and cobbles 5 percent of the surface:

A1—0 to 6 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine vesicular pores; 40 percent pebbles, 5 percent cobbles, 1 percent stones; neutral (pH 7.2); clear smooth boundary. (1 to 9 inches thick)

A2—6 to 10 inches; grayish brown (10YR 5/2) very gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine tubular pores; 35 percent pebbles; neutral (pH 7.2); clear smooth boundary. (0 to 8 inches thick)

BA—10 to 14 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; 40 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary. (0 to 6 inches thick)

Bt—14 to 17 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine tubular pores; common thin clay films on faces of peds and lining pores; 25 percent pebbles, 25 percent cobbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (4 to 12 inches thick)

2R—17 inches; unweathered rhyolite.

Type location: Pershing County, Nevada; in the Augusta Mountains, near Dixie Valley, about 1,600 feet north and 1,800 feet west of the southeast corner of sec. 24, T. 25 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 7 to 10 inches thick; does not include the Bt horizon
Depth to bedrock: 14 to 20 inches
Control section: Content of clay—20 to 35 percent; content of rock fragments—50 to 80 percent, mostly pebbles or cobbles
Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—platy, granular, or subangular blocky

BA horizon:
Chroma—2 to 4
Texture—very cobbly loam or very gravelly loam

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—very cobbly, extremely cobbly, very gravelly, or extremely gravelly clay loam; very gravelly sandy clay loam; very cobbly or very gravelly loam in some pedons
Structure—subangular or angular blocky

Cleaver Series

The Cleaver series consists of shallow, well drained, slowly permeable soils that formed in alluvium derived primarily from basic igneous rocks. Cleaver soils are on fan piedmont remnants. Slopes are 2 to 4 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 51 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durargids

Typical pedon: Cleaver gravelly loam, 2 to 4 percent slopes, in an area of Cleaver-Trocken-Bluewing association where pebbles cover approximately 15.0 percent, cobbles 2.0 percent, and stones 0.1 percent of the surface:

A—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; strong thick platy structure parting to weak very thin platy; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine and common fine and medium vesicular and common very fine tubular pores; 15 percent pebbles, 1 percent cobbles; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (2 to 8 inches thick)

Bt1—5 to 11 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; many very fine tubular pores; 15 percent pebbles; common thin clay films on faces of peds and lining pores; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (4 to 10 inches thick)

Bt2—11 to 17 inches; very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; soft, very friable, sticky and plastic; many very fine and common fine roots; many very fine tubular pores; 25 percent pebbles; few thin clay films on faces of peds and lining pores; slightly effervescent; strongly alkaline (pH 8.4); abrupt smooth boundary. (0 to 8 inches thick)

Bqkm—17 to 24 inches; white (10YR 8/2), indurated duripan, very pale brown (10YR 7/3) moist; few very fine and fine roots in fractures; a layer of pebbles in the lower part; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (6 to 24 inches thick)

Cqk—24 to 51 inches; very pale brown (10YR 7/3) extremely gravelly coarse sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine tubular pores; 55 percent pebbles, 15 percent cobbles; weak silica cementation; violently effervescent; lime coatings on the underside of rock fragments; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 27 inches thick)

Ck—51 to 60 inches; very pale brown (10YR 7/3) extremely gravelly coarse sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; 55 percent pebbles, 15 percent cobbles; violently effervescent; lime coatings on all sides of rock fragments; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; in Dixie Valley, about 600 feet south and 1,200 feet west of the northeast corner of sec. 29, T. 25 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and early spring

Soil temperature: 54 to 57 degrees F

Depth to an indurated duripan: 10 to 20 inches

A horizon:
- Carbonates—commonly calcareous in the uppermost few inches as a result of recharge from dust
- Other features—a varnished desert pavement in some pedons

Bt horizon:
- Hue—7.5YR or 10YR
- Value—5, 6, or 7 dry, 3, 4, or 5 moist
- Chroma—3 to 5
- Texture—gravelly loam or gravelly clay loam; subhorizons of gravelly clay in some pedons
- Content of clay—25 to 35 percent
- Content of rock fragments—15 to 35 percent
- Reaction—neutral to moderately alkaline
- Other features—in some pedons a transitional Bt horizon of sandy loam, fine sandy loam, loam, or clay loam that has few or no pebbles in the upper part or that has 15 to 40 percent pebbles and cobbles in the lower part

Colbar Series

The Colbar series consists of moderately deep, well drained, moderately slowly permeable soils that formed in residuum and colluvium derived from rhyolitic and andesitic rocks. Colbar soils are on foothills. Slopes are 30 to 50 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Typical pedon: Colbar very cobbly loam, 30 to 50 percent slopes, in an area of Laped-Colbar association where pebbles cover approximately 20 percent, cobbles 30 percent, and stones 5 percent of the surface:

A1—0 to 1 inch; pale brown (10YR 6/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common fine vesicular and tubular pores; 10 percent pebbles, 30 percent cobbles, 5 percent stones; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 4 inches thick)

A2—1 to 6 inches; light brownish gray (10YR 6/2) cobbly loam, dark grayish brown (10YR 4/2) moist; strong very thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine pores; 10 percent pebbles, 10 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 5 inches thick)

Bt—6 to 13 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; few fine and very fine tubular pores; 15 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds and lining pores; moderately alkaline (pH

8.2); clear smooth boundary. (3 to 14 inches thick)
Btk—13 to 24 inches; very pale brown (10YR 7/3) cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine and very fine tubular pores; 15 percent pebbles, 10 percent cobbles; thin lime coatings on the underside of rock fragments; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 12 inches thick)
2R—24 inches; weathered rhyolite.

Type location: Pershing County, Nevada; in the Fish Creek Mountains, near Jersey Valley, about 500 feet west and 1,800 feet north of the southeast corner of sec. 4, T. 26 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in late winter and spring
Soil temperature: 48 to 52 degrees F
Control section: Content of clay—25 to 35 percent; content of rock fragments—15 to 35 percent, mainly pebbles and cobbles
Depth to bedrock: 20 to 40 inches
Combined thickness of the A and Bt horizons: 11 to 24 inches
Other features: A Bk horizon that has thin lime coatings on the underside of rock fragments below the Bt horizon in some pedons

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate, very fine to medium, subangular blocky or platy
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—5 or 6 dry, 3, 4, or 5 moist
Chroma—3 or 4
Structure—weak to strong, very fine to medium subangular blocky
Texture—cobbly loam, cobbly clay loam, or gravelly clay loam
Reaction—mildly alkaline or moderately alkaline

C or Bk horizon (not in all pedons):
Value—5, 6, or 7 dry, 4 or 5 moist
Chroma—3 or 4
Texture—gravelly loam or cobbly loam

Cortez Series

The Cortez series consists of moderately deep, well drained, very slowly permeable soils that formed in thin loess deposits over mixed alluvium. Cortez soils are on fan piedmonts and mountain valley fans. Slopes are 2 to 8 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 46 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Nadurargids

Typical pedon: Cortez very fine sandy loam, 2 to 8 percent slopes, in an area where pebbles cover approximately 5 percent of the surface:

A1—0 to 3 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 6 inches thick)
A2—3 to 8 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 8 inches thick)
Btn—8 to 14 inches; yellowish brown (10YR 5/4) clay, dark brown (10YR 4/3) moist; strong medium columnar structure; very hard, very firm, very sticky and very plastic; many very fine and fine roots; few very fine tubular pores; 10 percent pebbles; continuous, thin clay films on faces of peds; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 15 inches thick)
Btnk1—14 to 27 inches; yellowish brown (10YR 5/4) clay, dark brown (10YR 4/3) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; 10 percent pebbles; continuous, thin clay films on faces of peds; a slightly effervescent matrix with common lime coatings on peds; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 20 inches thick)
Btnk2—27 to 33 inches; light yellowish brown (10YR 6/4) clay, brown (10YR 5/3) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; 10 percent pebbles; many thin clay films on faces of peds; strongly effervescent; many fine lime filaments; strongly alkaline (pH 8.6); abrupt smooth boundary. (0 to 6 inches thick)
Bqkm—33 to 46 inches; very pale brown (10YR 8/3), indurated duripan, yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm; strongly effervescent; strongly alkaline (pH 8.6);

abrupt smooth boundary. (13 to 35 inches thick)
2C—46 to 60 inches; pale brown (10YR 6/3) very cobbly coarse sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine interstitial pores; 25 percent pebbles, 30 percent cobbles; strongly alkaline (pH 8.5).

Type location: Pershing County, Nevada; approximately 28 miles south of Winnemucca, in Grass Valley, about 1,200 feet south and 300 feet east of the northwest corner of sec. 28, T. 31 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 50 degrees F
Control section: Content of clay—40 to 50 percent, when mixed; content of rock fragments—10 to 15 percent
Depth to an indurated duripan: 22 to 36 inches
Other features: An abrupt textural boundary between the A or BA horizon and the Bt horizon

A horizon:
Value—5 to 7 dry (more than 5.5 when the uppermost 7 inches is mixed), 3 or 4 moist
Chroma—2 or 3
Structure—moderate or strong, very thin to thick platy; granular in some pedons
Reaction—neutral to moderately alkaline

Bt and Btnk horizons:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4
Texture—clay, gravelly clay, or silty clay; thin subhorizons of clay loam in some pedons
Structure—dominantly moderate or strong, medium or coarse, prismatic or columnar but subangular or angular blocky or massive in the lower part of the Btnk horizon in some pedons
Reaction—mildly alkaline to strongly alkaline
Carbonates—common or many fine or medium lime filaments and seams in the lower part

Bqkm horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 4
Reaction—strongly alkaline or very strongly alkaline
Thickness—8 to more than 30 inches

C horizon (not in all pedons):
Texture—very gravelly coarse sandy loam or very cobbly loamy coarse sand
Other features—moderately alkaline or strongly saline-alkaline

Daick Series

The Daick series consists of very shallow or shallow, well drained, slowly permeable soils that formed in residuum derived from tuffaceous rocks. Daick soils are on low hills and mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Clayey, montmorillonitic (calcareous), mesic, shallow Typic Torriorthents

Typical pedon: Daick stony clay loam, 30 to 50 percent slopes, in an area of Tenabo-Daick-Oxcorel association where pebbles cover approximately 20 percent, cobbles 5 percent, and stones 3 percent of the surface:

A—0 to 1 inch; pale yellow (5Y 7/3) stony clay loam, olive (5Y 5/4) moist; weak very thin platy structure; slightly hard, very friable, sticky and plastic; many very fine roots; many very fine and fine and few medium vesicular pores; 10 percent pebbles, 2 percent cobbles, 3 percent stones; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 3 inches thick)
C—1 to 4 inches; olive (5Y 5/4) clay, olive (5Y 5/4) moist; massive; hard, firm, very sticky and very plastic; many very fine and few fine roots; many very fine and few fine tubular pores; 2 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (3 to 12 inches thick)
Cr—4 inches; pale olive (5Y 6/4), strongly calcareous bedrock, olive (5Y 5/4) moist.

Type location: Pershing County, Nevada; in Jersey Valley, approximately 5 miles south of Needle Peak, about 2,500 feet south and 1,400 feet west of the northeast corner of sec. 4, T. 27 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 48 to 53 degrees F
Depth to paralithic contact: 4 to 14 inches
Control section: Content of clay—35 to 60 percent; texture—clay or clay loam; content of rock fragments—0 to 25 percent, mainly pebbles
Reaction throughout the profile: Moderately alkaline or strongly alkaline
Exchangeable sodium: As much as 15 percent

A horizon:
Hue—2.5Y or 5Y
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 to 6 dry
Structure—platy or subangular blocky
Consistence—soft or slightly hard

C horizon:
Hue—2.5Y or 5Y dry or moist
Value—4 or 5 moist

Dekoom Series

The Dekoom series consists of very deep, well drained, moderately permeable soils that formed in residuum and colluvium weathered from limestone, dolostone, and calcareous shale. Dekoom soils are on side slopes of mountains. Slopes are 50 to 75 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic Cryic Rendolls

Typical pedon: Dekoom very gravelly loam, 50 to 75 percent slopes, in an area of Polum-Dekoom-Polum Variant association:

A1—0 to 3 inches; brown (10YR 4/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; few very fine vesicular pores; 35 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)

A2—3 to 13 inches; brown (10YR 4/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine, medium, and coarse roots; common very fine tubular pores; 30 percent pebbles; thin lime coatings on the underside of pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (5 to 10 inches thick)

Bk1—13 to 21 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; few very fine tubular pores; 50 percent pebbles; few fine soft masses of lime and thin lime coatings on all sides of pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (5 to 10 inches thick)

Bk2—21 to 37 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine tubular pores; 55 percent pebbles; common medium filaments and soft masses of lime and thin lime coatings on all sides of pebbles; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (10 to 16 inches thick)

C—37 to 60 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 70 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; near Star Peak, approximately 10 miles south of Imlay, about 1,600 feet south and 900 feet west of the northeast corner of sec. 29, T. 31 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually moist; moist from late fall through early summer, dry from late July through September
Soil temperature: 42 to 47 degrees F
Average soil temperature in summer: 54 to 59 degrees F
Mollic epipedon: 10 to 15 inches thick; does not include the Bk horizon
Combined thickness of the A and Bk horizons: 20 to 40 inches
Control section: Content of clay—10 to 18 percent; content of rock fragments—40 to 60 percent, mainly pebbles; carbonate equivalent—40 to 60 percent; reaction—moderately alkaline or strongly alkaline

A horizon:
Value—4 or 5 dry
Chroma—2 or 3
Structure—platy or granular

Bk horizon:
Value—4, 5, or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—very gravelly loam or very gravelly silt loam
Content of clay—10 to 15 percent
Content of rock fragments—35 to 60 percent, mainly pebbles

C horizon:
Value—4, 5, or 6 dry, 4 or 5 moist
Chroma—3 or 4
Content of rock fragments—50 to 75 percent, mainly pebbles

Denay Series

The Denay series consists of deep, well drained, moderately permeable soils that formed in colluvium weathered from limestone and calcareous shale. Denay soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Calcixerolls

Typical pedon: Denay gravelly loam, 30 to 50 percent slopes, in an area of Denay-Wereld-Xine association:

A1—0 to 2 inches; brown (10YR 5/3) gravelly loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine and few fine vesicular pores; 20 percent pebbles; slightly effervescent; mildly alkaline (pH 7.8); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 10 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine and few fine tubular pores; 30 percent pebbles; slightly effervescent; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 8 inches thick)

Bw—10 to 24 inches; brown (10YR 5/3) extremely gravelly silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine tubular pores; 60 percent pebbles; strongly effervescent; few fine soft masses of lime and thin lime coatings on the underside of pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (8 to 14 inches thick)

Bk—24 to 41 inches; light gray (10YR 7/2) extremely gravelly loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 80 percent pebbles; violently effervescent; lime coatings on all sides of pebbles; mildly alkaline (pH 7.8); clear wavy boundary. (6 to 17 inches thick)

C—41 to 44 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 60 percent pebbles; strongly effervescent; mildly alkaline (pH 7.8); abrupt wavy boundary. (0 to 20 inches thick)

2R—44 inches; unweathered limestone.

Type location: Pershing County, Nevada; in the northern part of the Humboldt Range, about 700 feet south and 1,800 feet east of the northwest corner of sec. 27, T. 31 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 45 to 47 degrees F
Mollic epipedon: 10 to 20 inches thick
Depth to the Bk horizon: 15 to 24 inches
Depth to bedrock: 40 to 60 inches

Control section: Content of clay—10 to 15 percent; texture—extremely gravelly loam or extremely gravelly silt loam; content of rock fragments—60 to 75 percent, mainly pebbles

Other features: Effervescent throughout the profile, except for the uppermost 2 to 3 inches of some pedons

A horizon:
- Value—4 or 5 dry, 2 or 3 moist
- Chroma—1 or 2
- Structure—weak or moderate, fine or medium, subangular blocky or granular or weak medium or coarse prismatic

Bw horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Texture—very gravelly or extremely gravelly loam
- Content of rock fragments—35 to 60 percent
- Structure—weak or moderate, fine or medium subangular blocky
- Reaction—mildly alkaline or moderately alkaline

Bk horizon:
- Hue—10YR or 7.5YR
- Value—5 to 8 dry, 4 to 7 moist
- Chroma—1 to 4
- Structure—subangular blocky; massive in some pedons
- Reaction—mildly alkaline or moderately alkaline

C horizon:
- Hue—10YR or 7.5YR
- Value—6 or 7 dry, 4 to 6 moist
- Chroma—2 or 4
- Content of rock fragments—70 to 85 percent pebbles
- Consistence—soft to very hard, very friable to very firm
- Reaction—mildly alkaline or moderately alkaline
- Other features—subhorizons that are weak and lime cemented in some pedons

Dewar Series

The Dewar series consists of shallow, well drained, moderately slowly permeable soils that formed in alluvium derived from mixed sources and in a thin mantle of loess. Dewar soils are on fan piedmont remnants. Slopes are 4 to 15 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 46 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durargids

Typical pedon: Dewar gravelly silt loam, 4 to 15 percent slopes, in an area of Dewar-Tenabo-Beoska association where pebbles cover approximately 20 percent of the surface:

A1—0 to 2 inches; grayish brown (10YR 5/2) gravelly silt loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; many very fine vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 5 inches thick)

A2—2 to 5 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 3 inches thick)

Bt—5 to 8 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and few fine roots; many very fine tubular pores; 15 percent pebbles; common thin clay films on faces of peds; lime coatings on the underside of pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 14 inches thick)

Btk1—8 to 12 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 5/3) moist; strong medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and few medium roots; common very fine tubular pores; 15 percent pebbles, 2 percent cobbles; few thin clay films on faces of peds; lime pendants on the underside of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 6 inches thick)

Btk2—12 to 17 inches; pale brown (10YR 6/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine, fine, and medium roots; few very fine tubular pores; 15 percent pebbles, 2 percent cobbles; few thin clay films on faces of peds; lime coatings on all sides of rock fragments; 5 percent durinodes; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 8 inches thick)

Bqkm1—17 to 20 inches; very pale brown (10YR 7/3), fractured, indurated duripan, very pale brown (10YR 7/4) moist; strong thick platy structure; extremely hard, extremely firm; few fine roots; few fine interstitial pores in fractures; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (3 to 11 inches thick)

Bqkm2—20 to 40 inches; very pale brown (10YR 7/3), continuous, indurated duripan, very pale brown (10YR 7/4) moist; strong thick platy structure; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; approximately 6 miles south of Mill City, on Dun Glen Flat, about 1,500 feet south and 700 feet west of the northeast corner of sec. 6, T. 31 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to an indurated duripan: 13 to 20 inches
Reaction: Neutral to moderately alkaline in the A and Bt horizons

A horizon:
- Chroma—2 or 3
- Structure—moderate or strong, very thin to thick platy or fine or medium granular

Bt horizon:
- Value—6 to 7 dry, 3 or 4 moist
- Chroma—2, 3, or 4 dry, 3 or 4 moist
- Texture—gravelly silty clay loam or gravelly clay loam
- Content of clay—27 to 35 percent
- Content of rock fragments—15 to 30 percent, mainly pebbles
- Structure—weak to strong, fine to coarse subangular blocky

Btqk horizon (not in all pedons):
- Content of clay—15 to 27 percent
- Durinodes—weak or very weak, less than 30 percent

Bqkm horizon:
- Structure—massive or moderately thick to very thick platelike layers
- Cementation—alternately strongly cemented or discontinuously indurated horizons below the duripan in some pedons
- Other features—a 1- to 3-inch zone of degraded duripan material along the upper boundary of the horizon in some pedons

Duffer Series

The Duffer series consists of very deep, poorly drained, moderately slowly permeable soils that formed in alluvium, loess, and lake sediments derived from mixed rock sources. Duffer soils are on alluvial flats. Slopes are less than 1 percent. The mean annual

precipitation is about 8 inches, and the mean annual temperature is about 46 degrees F.

Taxonomic class: Fine-silty, carbonatic, mesic Aquic Calciorthids

Typical pedon: Duffer silty clay loam:

A1—0 to 3 inches; grayish brown (10YR 5/2) silty clay loam, dark brown (10YR 3/3) moist; weak thin platy structure that parts to weak fine subangular blocky; hard, firm, very sticky and very plastic; many very fine and fine roots; many fine tubular and interstitial pores; slightly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (2 to 6 inches thick)

A2—3 to 8 inches; gray (10YR 6/1) silty clay loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium prismatic structure that parts to moderate fine subangular and angular blocky; hard, friable, very sticky and very plastic; many very fine and fine roots; many very fine and common fine tubular pores; many fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (0 to 5 inches thick)

Bw—8 to 16 inches; light gray (2.5Y 7/2) silty clay loam, grayish brown (2.5Y 5/2) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and common fine roots; many very fine and few fine interstitial and tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (8 to 18 inches thick)

Bk1—16 to 23 inches; light gray (5Y 7/2) silty clay loam, olive gray (5Y 5/2) moist; massive; hard, friable, sticky and plastic; common very fine and few fine roots; common very fine and fine tubular pores; 15 percent light brownish gray (10YR 6/2) lime nodules; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (6 to 11 inches thick)

Bk2—23 to 31 inches; white (5Y 8/2) silty clay loam, olive (5Y 5/3) moist; massive; hard, friable, very sticky and very plastic; few very fine and fine roots; many very fine and few fine tubular pores; 15 percent light brownish gray (10YR 6/2) lime nodules 1 to 2 inches in diameter; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (7 to 31 inches thick)

Bk3—31 to 44 inches; white (5Y 8/1) silty clay loam, pale olive (5Y 6/3) moist; massive; hard, firm, very sticky and very plastic; few very fine and fine roots; many very fine and fine tubular pores; 25 percent extremely hard lime nodules as much as 4 inches in diameter; strongly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (0 to 14 inches thick)

Bk4—44 to 58 inches; white (2.5Y 8/2) silty clay loam, grayish brown (2.5Y 5/2) moist; massive; very hard, firm, very sticky and very plastic; few very fine and fine and few medium tubular pores in nodules; 60 percent irregularly shaped lime nodules as much as 7 inches in diameter; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 15 inches thick)

Bk5—58 to 72 inches; white (5Y 8/1) silty clay loam, light olive gray (5Y 6/2) moist; massive; very hard, firm, sticky and plastic; few very fine tubular pores in nodules; 30 percent irregularly shaped nodules similar to those in the horizon above; very strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 12 miles south of Winnemucca, in Grass Valley, about 1,320 feet north and 1,320 feet east of the southwest corner of sec. 25, T. 34 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually moist; saturated between depths of 20 to 40 inches in early spring and generally moist because of capillary moisture from ground water; dry periods in summer and fall

Soil temperature: 47 to 52 degrees F

Depth to the calcic horizon: 12 to 29 inches

Control section: Content of clay—20 to 35 percent; texture—silt loam or silty clay loam

Reaction throughout the profile: Generally strongly alkaline or very strongly alkaline but moderately alkaline in some parts of the profile in some pedons

Other features: Generally strongly saline-sodic-affected in the uppermost 20 to 30 inches in unreclaimed areas

A horizon:
- Hue—10YR to 5Y
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—1 to 4

Bw horizon:
- Hue—10YR or 2.5Y
- Value—4 or 5 moist
- Chroma—2 to 4
- Structure—weak or moderate, very fine to medium, subangular blocky, granular, or platy; massive in the lower part in some pedons

Bk horizon:
- Hue—10YR to 5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—1 to 4
- Structure—subangular blocky; massive in some pedons
- Calcium carbonate equivalent—40 to 60 percent

2C horizon (not in all pedons):
Hue—10YR to 5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 to 4
Texture—stratified very fine sandy loam to silty clay loam
Content of clay—15 to 30 percent

Dun Glen Series

The Dun Glen series consists of very deep, well drained, moderately permeable soils that formed in alluvium derived from mixed rock sources and in a mantle of loess. Dun Glen soils are on fan skirts and inset fans. Slopes are 0 to 4 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Typic Camborthids

Typical pedon: Dun Glen very fine sandy loam, 0 to 2 percent slopes:

A—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak thick platy structure; slightly hard, friable, nonsticky and nonplastic; few fine and medium roots; many very fine vesicular pores; moderately alkaline (pH 8.4); clear wavy boundary. (2 to 5 inches thick)

Bw—3 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak very fine angular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine interstitial and tubular pores; moderately alkaline (pH 8.4); clear wavy boundary. (6 to 10 inches thick)

Bk1—10 to 15 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (4 to 10 inches thick)

Bk2—15 to 47 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; few very fine roots; common very fine interstitial pores; common fine seams of lime; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (8 to 36 inches thick)

Bk3—47 to 61 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine interstitial pores; common fine seams of lime; violently effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; approximately 19 miles south of Winnemucca, about 1,600 feet north and 400 feet east of the southwest corner of sec. 26, T. 33 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 53 degrees F
Control section: Content of clay—9 to 14 percent; texture—fine sandy loam, very fine sandy loam, or loam having 15 to 35 percent fine sand or coarser sand; content of rock fragments—as much as 10 percent when mixed
Other features: As much as 15 percent hard, firm durinodes in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Reaction—mildly alkaline or moderately alkaline

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Texture—very fine sandy loam or silt loam
Content of rock fragments—as much as 10 percent, mainly pebbles
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Content of clay—9 to 14 percent
Content of rock fragments—5 to 30 percent, mainly pebbles
Reaction—moderately alkaline or very strongly alkaline
Other features—gravel below a depth of 40 inches in some pedons

Eastwell Series

The Eastwell series consists of shallow, well drained, moderately permeable soils that formed in mixed alluvium and loess. Eastwell soils are on fan piedmont remnants. Slopes are 2 to 30 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Haploxerollic Durorthids

Typical pedon: Eastwell very gravelly loam, 2 to 8 percent slopes, in an area of Eastwell-Shabliss-Blackhawk association:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist;

weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and few fine vesicular pores; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 6 inches; light brownish gray (10YR 6/2) gravelly silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine tubular pores; 25 percent pebbles, 5 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 5 inches thick)

Bw—6 to 12 inches; pale brown (10YR 6/3) very gravelly loam, 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; few very fine tubular pores; 35 percent pebbles, 5 percent cobbles; strongly effervescent; thin lime coatings on the underside of coarse fragments; strongly alkaline (pH 8.6); abrupt smooth boundary. (4 to 13 inches thick)

Bqkm—12 to 20 inches; white (10YR 8/2), strongly cemented duripan that has very thin, discontinuous silica laminae on the horizon surface; massive; hard, firm; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (1 to 8 inches thick)

Bk—20 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine interstitial pores; 50 percent pebbles, 10 percent cobbles; strongly effervescent; lime coatings on rock fragments; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 2 miles south of Imlay, about 600 feet north and 400 feet east of the southwest corner of sec. 28, T. 32 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist in winter and spring, dry from June through October

Soil temperature: 47 to 52 degrees F

Depth to a duripan: 10 to 20 inches

Control section: Content of clay—10 to 27 percent; texture—sandy loam or loam; content of rock fragments—35 to 50 percent, mainly pebbles

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—platy or granular
- Effervescence—noneffervescent to strongly effervescent

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate, prismatic or subangular blocky
- Effervescence—slightly effervescent to violently effervescent

Bqkm horizon:
- Cementation—continuous, strongly silica-cemented duripan and, in most pedons, thin, discontinuous silica lamellae
- Effervescence—strongly effervescent or violently effervescent

Bk horizon:
- Value—6, 7, or 8 dry, 4, 5, or 6 moist
- Chroma—2, 3, or 4
- Texture—very gravelly loam or very cobbly loam
- Content of rock fragments—35 to 60 percent, mainly pebbles and cobbles
- Cementation—10 to 40 percent durinodes or weak, discontinuous lime and silica cementation
- Effervescence—strongly effervescent or violently effervescent
- Segregated lime—common lime coatings on the underside of rock fragments

Enko Series

The Enko series consists of very deep, well drained, slowly permeable soils that formed in alluvium derived from mixed rock sources and influenced by loess and volcanic ash. Enko soils are on fan aprons and fan skirts. Slopes are 2 to 8 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Durixerollic Camborthids

Typical pedon: Enko fine sandy loam, 2 to 8 percent slopes, in an area of Gwena-Enko-Frewa association:

A1—0 to 2 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine vesicular pores; neutral (pH 7.2); clear smooth boundary. (2 to 7 inches thick)

A2—2 to 6 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots;

many very fine tubular pores; neutral (pH 7.2); clear smooth boundary. (0 to 4 inches thick)

Bw1—6 to 16 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine tubular pores; mildly alkaline (pH 7.6); clear smooth boundary. (6 to 11 inches thick)

Bw2—16 to 29 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine roots; common very fine tubular pores; mildly alkaline (pH 7.6); abrupt wavy boundary. (0 to 13 inches thick)

Bqk—29 to 60 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine tubular pores; 5 percent pebbles; weak, continuous silica cementation; strongly effervescent; common fine lime filaments; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 20 miles southwest of Winnemucca, about 2,000 feet east and 1,000 feet south of the northwest corner of sec. 34, T. 33 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 49 to 52 degrees F

Combined thickness of the A and Bw horizons: 12 to 30 inches

Control section: Content of clay—10 to 18 percent; content of rock fragments—0 to 15 percent pebbles

Depth to weak, continuous cementation: 14 to 30 inches

Other features: A substratum that is sandy or that has gypsum crystals at a depth of 40 inches in some pedons; a very gravelly or extremely gravelly substratum below a depth of 40 inches in some pedons; a noneffervescent Bq horizon above the Bqk horizon in some pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—commonly 6 or 7 dry but 5 dry in some subhorizons in some pedons; 3 or 4 moist
- Chroma—2 or 3
- Structure—very fine or fine granular or very thin to medium platy
- Consistence—slightly sticky or sticky, slightly plastic or plastic
- Reaction—neutral to moderately alkaline

Bw horizon:
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2, 3, or 4
- Texture—mainly loam, fine sandy loam, or sandy loam; strata of silt loam or clay loam in the upper part in some pedons
- Structure—prismatic or angular or subangular blocky; massive in some pedons
- Consistence—slightly sticky or sticky, slightly plastic or plastic
- Reaction—neutral to moderately alkaline, becoming more alkaline with depth
- Carbonates—calcareous in the lower part of the horizon in some pedons

Bqk and Bq horizons (not in all pedons):
- Hue—10YR, 2.5Y, or 5Y
- Value—4 to 6 moist, 6 to 8 dry
- Chroma—1 to 4 dry, 2 to 4 moist
- Texture—loam, sandy loam, or fine sandy loam
- Silica cementation—weakly, continuously silica-cemented horizons 10 to 40 inches thick; 20 to 50 percent durinodes or 20 to 75 percent weak, discontinuous silica cementation in subhorizons that are not weakly, continuously silica cemented
- Reaction—mildly alkaline to strongly alkaline, becoming more alkaline with depth
- Other features—relict iron mottles or mica particles in many pedons

Findout Series

The Findout series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum derived from limestone. Findout soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is 52 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Calciorthids

Typical pedon: Findout very gravelly loam, 30 to 50 percent slopes, in an area of Findout-Puffer-Rock outcrop association where pebbles cover approximately 30 percent, cobbles 10 percent, and stones 5 percent of the surface:

A—0 to 4 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many fine vesicular pores; 30 percent pebbles, 10 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 4 inches thick)

Bk1—4 to 8 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable,

slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; 30 percent pebbles, 5 percent cobbles; 5 percent lime coatings and pendants on rock fragments; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 8 inches thick)

Bk2—8 to 14 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; 40 percent pebbles, 5 percent cobbles; 8 percent lime coatings and pendants on rock fragments; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (6 to 8 inches thick)

R—14 inches; weathered, fractured limestone; unweathered at a depth of 18 inches.

Type location: Pershing County, Nevada; in the Augusta Mountains, about 2,500 feet east and 2,000 feet north of the southwest corner of sec. 22, T. 25 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and early spring and for very short periods following summer thunderstorms

Soil temperature: 53 to 56 degrees F

Depth to unweathered bedrock: 12 to 20 inches

Control section: Content of clay—18 to 27 percent; content of rock fragments—35 to 50 percent, mainly pebbles

Reaction throughout the profile: Moderately alkaline or strongly alkaline

Carbonates: Calcareous throughout the profile

Calcium carbonate equivalent: 40 to 60 percent, by weight, in the fraction less than 20 millimeters in size

A horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3

Bk1 horizon:
- Value—6 or 7 dry, 4, 5, or 6 moist
- Chroma—2, 3, or 4
- Content of rock fragments—35 to 50 percent, mainly pebbles
- Texture—loam or clay loam
- Content of clay—25 to 35 percent
- Segregated lime—5 to 12 percent coatings and pendants on rock fragments

Bk2 horizon:
- Value—7 or 8 dry, 4, 5, or 6 moist
- Chroma—2 or 3
- Content of rock fragments—35 to 50 percent, mainly pebbles
- Segregated lime—5 to 12 percent coatings and pendants on rock fragments

Frewa Series

The Frewa series consists of very deep, well drained soils that formed in sandy alluvium derived from mixed rock sources and influenced by volcanic ash. Frewa soils are moderately rapidly permeable in the upper part and slowly permeable in the lower part. They are on fan skirts. Slopes are 2 to 8 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Mixed, mesic Durorthidic Xeric Torripsamments

Typical pedon: Frewa loamy fine sand, 2 to 8 percent slopes, in an area of Gwena-Enko-Frewa association where pebbles cover approximately 1 percent of the surface:

A1—0 to 2 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 3 percent pebbles; neutral (pH 6.8); clear smooth boundary. (2 to 4 inches thick)

A2—2 to 8 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 5/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; neutral (pH 6.8); clear smooth boundary. (2 to 6 inches thick)

Bw—8 to 18 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; common very fine tubular pores; 4 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 10 inches thick)

Bq—18 to 33 inches; pale brown (10YR 6/3) loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few fine and very fine roots; few very fine tubular pores; 20 percent durinodes; moderately alkaline (pH 8.0); abrupt smooth boundary. (4 to 15 inches thick)

Bqk1—33 to 44 inches; pale brown (10YR 6/3) loamy sand, yellowish brown (10YR 5/4) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; many fine irregularly shaped lime filaments; weak, continuous cementation; strongly effervescent; strongly alkaline

(pH 8.6); clear smooth boundary. (8 to 18 inches thick)

Bqk2—44 to 60 inches; pale brown (10YR 6/3) loamy sand, yellowish brown (10YR 5/4) moist; massive; hard, firm, nonsticky and nonplastic; few fine and very fine roots; few very fine tubular pores; common fine irregularly shaped lime filaments; weak, continuous cementation; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 6 miles east of Mill City, about 50 feet north of the southwest corner of sec. 33, T. 33 N., R. 36 E. (40 degrees, 40 minutes, 59 seconds north latitude and 117 degrees, 53 minutes, 33 seconds west longitude).

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 47 to 52 degrees F

Depth to weak, continuous silica cementation: 15 to 33 inches

Depth to carbonates: 15 to 33 inches

Control section: Texture—loamy sand or loamy fine sand; content of clay—5 to 10 percent; content of rock fragments—as much as 25 percent

A horizon:
- Value—5 or 6 dry, 3 or 4 moist (averages 6 dry and 4 moist when the uppermost 7 inches is mixed)
- Chroma—2 or 3
- Structure—platy, granular, or single grain
- Consistence—nonsticky or slightly sticky and nonplastic or slightly plastic
- Reaction—neutral or mildly alkaline

Bw horizon:
- Value—3 or 4 moist
- Texture—loamy fine sand or loamy sand
- Content of clay—5 to 10 percent
- Content of rock fragments—0 to 10 percent, mainly pebbles
- Structure—subangular blocky or platy
- Reaction—neutral or mildly alkaline

Bq and Bqk horizons:
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 or 3 dry, 2 to 4 moist
- Texture—loamy fine sand or loamy sand
- Content of clay—5 to 10 percent
- Content of rock fragments—as much as 25 percent pebbles in any one subhorizon
- Effervescence—strong or violent in the Bqk horizon
- Cementation—weak, continuous silica cementation in some subhorizons within a depth of 33 inches; 15 to 30 percent 10- to 35-millimeter durinodes or 20 to 70 percent weak, discontinuous silica cementation in some subhorizons
- Other features—slightly or moderately salt or sodium affected at a depth of 33 to 44 inches

Genegraf Series

The Genegraf series consists of very deep, well drained, moderately slowly permeable soils that formed in alluvium derived from mixed volcanic rocks. Genegraf soils are on fan piedmont remnants. Slopes are 2 to 8 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Natrargids

Typical pedon: Genegraf very gravelly very fine sandy loam, 2 to 8 percent slopes, in an area of Genegraf-Chilper-Bluewing association where pebbles cover approximately 65 percent and cobbles 3 percent of the surface:

A1—0 to 2 inches; very pale brown (10YR 7/3) very gravelly very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine, common medium, and few coarse vesicular pores; 40 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 6 inches thick)

A2—2 to 6 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; strong thin platy structure; slightly hard, very friable, sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 5 percent pebbles; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (0 to 4 inches thick)

Btnk1—6 to 11 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 5/3) moist; strong fine prismatic structure; hard, firm, sticky and plastic; common very fine roots; few very fine tubular pores; 10 percent pebbles; many thin clay films on faces of peds and lining pores; common fine, medium, and coarse lime seams; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 7 inches thick)

Btnk2—11 to 18 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine and fine tubular pores; 20 percent pebbles; common thin clay films on faces of

peds and lining pores; many medium and coarse lime seams; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (3 to 9 inches thick)

Bqk—18 to 24 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; 20 percent pebbles; weak, continuous silica cementation; many fine and medium lime filaments; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 22 inches thick)

Bk1—24 to 36 inches; very pale brown (10YR 7/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; moderate very fine and few fine tubular pores; 20 percent pebbles; common fine lime coatings on pebbles; violently effervescent; strongly alkaline (pH 9.0); gradual smooth boundary.

2Bk2—36 to 60 inches; very pale brown (10YR 7/4) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 65 percent pebbles; lime coatings on pebbles; violently effervescent; strongly alkaline (pH 8.0).

Type location: Pershing County, Nevada; in the eastern part of Buena Vista Valley, about 1,900 feet west and 700 feet south of the northeast corner of sec. 36, T. 30 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist from November through May, dry from June through October

Soil temperature: 53 to 59 degrees F

Depth to the base of the natric horizon: 11 to 24 inches

Depth to weak, continuous silica cementation: 11 to 24 inches

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Effervescence—noneffervescent to strongly effervescent in the upper part and slightly effervescent to violently effervescent in the lower part
- Structure—weak or moderate, fine or medium, platy or subangular blocky
- Reaction—moderately alkaline to very strongly alkaline

Btn horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—loam, clay loam, or sandy clay loam
- Content of clay—25 to 35 percent
- Content of rock fragments—10 to 25 percent pebbles when mixed, generally increasing in amount with depth
- Effervescence—strongly effervescent or violently effervescent
- Reaction—strongly alkaline or very strongly alkaline
- Exchangeable sodium—35 to 80 percent

Bqk and Bk horizons:
- Value—6, 7, or 8 dry, 5 or 6 moist
- Chroma—2, 3, or 4
- Texture—mainly sandy loam, fine sandy loam, loamy sand, or loam; a thin Bqk horizon of gravelly clay loam underlying the natric horizon in some pedons
- Content of rock fragments—25 to 50 percent, mainly pebbles, increasing in amount with depth and as much as 65 percent in the lower horizons
- Cementation—weak, continuous silica cementation in the upper part of the Bqk horizon and weak, continuous or discontinuous cementation or 0 to 30 percent weakly to strongly cemented durinodes in the lower subhorizons
- Reaction—moderately alkaline to very strongly alkaline

Gol Series

The Gol series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum derived from granitic rocks. Gol soils are on side slopes of mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid, shallow Xerollic Haplargids

Typical pedon: Gol very bouldery sandy loam, 30 to 50 percent slopes, in an area of Gol-Say-Rock outcrop association, steep, where pebbles cover approximately 15 percent, cobbles 20 percent, and stones and boulders 15 percent of the surface:

A1—0 to 3 inches; pale brown (10YR 6/3) very bouldery sandy loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine vesicular pores; 15 percent pebbles, 20 percent cobbles, 15 percent boulders and stones; mildly

alkaline (pH 7.8); clear smooth boundary. (2 to 5 inches thick).

A2—3 to 7 inches; pale brown (10YR 6/3) sandy loam, dark grayish brown (10YR 4/2) moist; weak very thin platy structure; soft, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (3 to 5 inches thick).

BA—7 to 12 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine and fine tubular pores; 30 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (4 to 7 inches thick).

Bt—12 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, firm, sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and few fine tubular pores; 40 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds and lining pores; mildly alkaline (pH 7.6); abrupt wavy boundary. (5 to 10 inches thick).

Cr—18 inches; soft weathered granite.

Type location: Pershing County, Nevada; in the Granite Mountain area, in the southern part of the East Range, about 500 feet south and 900 feet west of the northeast corner of sec. 22, T. 28 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Depth to weathered bedrock: 14 to 20 inches
Control section: Content of clay—18 to 35 percent; content of rock fragments—35 to 50 percent, dominantly pebbles 2 to 5 millimeters in size
Reaction throughout the profile: Neutral or mildly alkaline
Other features: Noncalcareous throughout the solum

A horizon:
Value—5, 6, or 7 dry
Chroma—2 or 3
Consistence—soft or slightly hard, very friable or friable

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4
Texture—very gravelly loam, very gravelly clay loam, or very gravelly sandy clay loam

Golconda Series

The Golconda series consists of moderately deep, well drained, slowly permeable soils that formed in mixed alluvium derived from quartzite, rhyolite, chert, limestone, basalt, andesite, slate, shale, and tuff and in a mantle of volcanic loess. Golconda soils are on fan piedmont remnants. Slopes are 2 to 15 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Haplic Nadurargids

Typical pedon: Golconda silt loam, 2 to 8 percent slopes:

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium platy structure parting to moderate very fine subangular blocky; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; common fine vesicular and many very fine interstitial pores; moderately alkaline (pH 8.0); abrupt smooth boundary. (3 to 7 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 6 inches thick)

BA—7 to 10 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; strongly alkaline (pH 8.6); abrupt wavy boundary. (0 to 5 inches thick)

Btnk—10 to 23 inches; brownish yellow (10YR 6/6) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting to strong fine and medium subangular blocky; very hard, very firm, sticky and plastic; few medium and common very fine roots; common very fine interstitial and many very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; common fine lime threads and common large soft lime masses; 15 percent pebbles; moderately thick lime coatings on the underside of some pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (8 to 22 inches thick)

Bqkm—23 to 36 inches; very pale brown (10YR 8/3), strongly cemented duripan, very pale brown (10YR 7/4) moist; massive; extremely hard, extremely firm;

few very fine roots in fractures; 45 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt wavy boundary. (10 to 20 inches thick)

Cqk—36 to 60 inches; very pale brown (10YR 8/4) very gravelly loamy coarse sand, light yellowish brown (10YR 6/4) moist; massive; very hard, firm, nonsticky and nonplastic; few very fine roots; 55 percent pebbles; weak silica and lime cementation; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 30 miles south of Winnemucca, about 1,200 feet west and 2,500 feet south of the northeast corner of sec. 19, T. 32 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist in winter and spring, dry from May through October

Soil temperature: 47 to 52 degrees F

Depth to a duripan: 20 to 40 inches

Depth to segregated lime: 8 to 15 inches

Other features: A BA or BC horizon, or both, in some pedons

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Reaction—mildly alkaline or moderately alkaline

Btn horizon:
- Value—5 to 7 dry, 3 to 5 moist
- Chroma—2 to 6
- Texture—gravelly clay loam, clay loam, or silty clay loam
- Content of clay—27 to 35 percent
- Content of rock fragments—5 to 35 percent, mainly pebbles
- Structure—generally prismatic but subangular blocky in the lower part in some pedons
- Reaction—moderately alkaline to very strongly alkaline
- Other features—20 to 50 percent exchangeable sodium; noneffervescent in the upper part of the horizon in some pedons

Bqk horizon (where above the duripan):
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 6

Bqkm horizon:
- Value—6, 7, or 8 dry, 5 or 6 moist
- Chroma—3 or 4
- Content of rock fragments—5 to 45 percent, mainly pebbles
- Structure—platy; massive in some pedons
- Consistence—very hard or extremely hard
- Other features—discontinuous lenses of indurated material in some pedons

Cqk horizon:
- Texture—stratified extremely gravelly loamy coarse sand to very gravelly sandy loam
- Other features—normally having loose or weakly cemented pebbles; no pebbles in some pedons

Goldrun Series

The Goldrun series consists of very deep, somewhat excessively drained, rapidly permeable soils that formed in sandy eolian and lacustrine material derived from a variety of rock sources. Goldrun soils are on sand dunes. Slopes are 4 to 15 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Mixed, mesic Xeric Torripsamments

Typical pedon: Goldrun fine sand, 4 to 15 percent slopes:

A—0 to 8 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; mildly alkaline (pH 7.8); clear smooth boundary. (5 to 9 inches thick)

C1—8 to 23 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine interstitial pores; mildly alkaline (pH 7.8); clear smooth boundary. (5 to 20 inches thick)

C2—23 to 35 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; few fine tubular pores; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (6 to 20 inches thick)

C3—35 to 60 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.0).

Type location: Pershing County, Nevada; approximately 11 miles north of Imlay, about 2,300 feet north and 2,100 feet west of the southeast corner of sec. 16, T. 34 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 47 to 52 degrees

Control section: Texture—dominantly fine sand that has strata of coarse sand, loamy sand, or loamy fine

sand in some pedons; content of clay—1 to 8 percent

Depth to lime: 17 to 35 inches

Other features: Less than 15 percent durinodes or weak, discontinuous silica bridging mineral grains in some pedons

A horizon:

Reaction—neutral to moderately alkaline

2Ck horizon (not in all pedons):

Reaction—moderately alkaline or strongly alkaline

Effervescence—slightly effervescent or strongly effervescent

Goldrun Variant

The Goldrun Variant consists of very deep, well drained, moderately permeable soils that formed in eolian sand-sized aggregates of gypsiferous sandy loam. Goldrun Variant soils are on parna dunes. Slopes are 4 to 15 percent. The mean annual precipitation is 4 to 6 inches, and the mean annual temperature is 53 to 56 degrees F.

Taxonomic class: Coarse-loamy, gypsic (calcareous), mesic Typic Torriorthents

Typical pedon: Goldrun Variant sandy loam, 4 to 15 percent slopes:

A1—0 to 1 inch; light gray (10YR 7/2) sandy loam having about 40 percent 1- to 3-millimeter gypsum crystals; pale brown (10YR 6/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many fine interstitial pores; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 3 inches thick)

A2—1 to 4 inches; very pale brown (10YR 7/4) sandy loam having about 60 percent 1- to 3-millimeter gypsum crystals; yellowish brown (10YR 5/4) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 4 inches thick)

Bk—4 to 18 inches; pale brown (10YR 6/3) sandy loam having about 40 percent 1- to 3-millimeter gypsum crystals; dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and common fine tubular pores; few fine lime seams; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (10 to 18 inches thick)

C1—18 to 24 inches; pale brown (10YR 6/3) sandy loam having about 50 percent 1- to 3-millimeter gypsum crystals; dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine and coarse roots; many fine interstitial pores; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (4 to 8 inches thick)

C2—24 to 34 inches; pale brown (10YR 6/3) sandy loam having about 50 percent 1- to 3-millimeter gypsum crystals; dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and few fine tubular pores; few fine lime seams; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 15 inches thick)

C3—34 to 60 inches; pale brown (10YR 6/3) sandy loam having about 50 percent 1- to 3-millimeter gypsum crystals; dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; violently effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; in the eastern part of Buena Vista Valley, about 1,400 feet east and 2,000 feet north of the southwest corner of sec. 32, T. 29 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods from November through April

Soil temperature: 53 to 57 degrees F

Control section: Texture—gypsiferous material with a field texture of sandy loam; content of calcium carbonate and gypsum—40 to 55 percent, mainly gypsum, throughout the profile

Reaction throughout the profile: Moderately alkaline to strongly alkaline

Golsum Series

The Golsum series consists of moderately deep, well drained, slowly permeable soils that formed in residuum and colluvium weathered from sandstone, chert, shale, and quartzite. Golsum soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 45 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Aridic Calcic Argixerolls

Typical pedon: Golsum very cobbly loam, 30 to 50 percent slopes, in an area of Golsum-Spinlin-Harcany association; in Humboldt County, east part:

A1—0 to 3 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate very fine

granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial and common very fine tubular pores; 20 percent pebbles, 15 percent cobbles, 2 percent stones; neutral (pH 7.0); clear smooth boundary. (2 to 6 inches thick)

A2—3 to 9 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) 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 interstitial and common very fine tubular pores; 20 percent pebbles; neutral (pH 7.0); clear smooth boundary. (0 to 8 inches thick)

Bt1—9 to 16 inches; brown (10YR 5/3) very gravelly clay, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine, fine, and medium roots; few very fine interstitial and common very fine and fine tubular pores; common thin clay films on faces of peds and lining pores; 35 percent pebbles; neutral (pH 7.2); abrupt wavy boundary. (4 to 8 inches thick)

Bt2—16 to 24 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; many thin and few moderately thick clay films on faces of peds, lining pores, and coating sand grains and pebbles; 50 percent pebbles; neutral (pH 7.2); abrupt wavy boundary. (6 to 10 inches thick)

Btk—24 to 31 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak fine angular blocky structure; slightly hard, very friable, sticky and plastic; few very fine roots; common fine interstitial pores; 50 percent pebbles; strongly effervescent in soft lime masses and seams and slightly effervescent in the matrix; strongly alkaline (pH 8.6); abrupt irregular boundary. (4 to 10 inches thick)

2Cr—31 to 34 inches; yellowish brown (10YR 5/4), weathered bedrock that crushes to very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive, but rock structure evident (paralithic contact); very hard, firm, sticky and plastic; 60 percent pebbles; strongly effervescent in seams; strongly alkaline (pH 8.6).

Type location: Humboldt County, Nevada; approximately 4 miles southeast of Winnemucca, in Water Canyon, about 1,400 feet south of the northeast corner of sec. 11, T. 35 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 42 to 47 degrees F
Mollic epipedon: 10 to 16 inches thick; includes at least the upper part of the Bt horizon
Depth to secondary carbonates: 15 to 30 inches
Depth to paralithic contact: 20 to 40 inches
Control section: Content of clay—average of 35 to 45 percent; texture—very gravelly clay, very gravelly clay loam; content of rock fragments—average of 35 to 55 percent, mainly pebbles

A horizon:
Value—4 or 5 dry
Chroma—2 or 3
Structure—weak or moderate, granular or subangular blocky

Bt horizon:
Hue—10YR or 7.5YR
Value—4, 5, or 6 dry, 3 or 4 moist
Chroma—2, 3, or 4
Structure—moderate or strong, subangular or angular blocky or prismatic
Reaction—neutral or mildly alkaline

Btk horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3, 4, or 5 moist
Chroma—2, 3, or 4
Structure—weak to strong, subangular or angular blocky
Reaction—moderately alkaline or strongly alkaline

Gosumi Series

The Gosumi series consists of deep, well drained, very slowly permeable soils that formed in residuum and colluvium weathered from quartz grit, sandstone, shale, and limestone. Gosumi soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls

Typical pedon: Gosumi stony loam, 30 to 50 percent slopes, in an area of Sumine-Gosumi-Nomara association; in Humboldt County, east part:

A1—0 to 3 inches; grayish brown (10YR 5/2) stony loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 15 percent pebbles, 2 percent cobbles, 1 percent stones;

neutral (pH 7.0); clear smooth boundary. (2 to 5 inches thick)

A2—3 to 8 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine interstitial pores; 15 percent pebbles; neutral (pH 6.8); abrupt wavy boundary. (4 to 6 inches thick)

Bt1—8 to 13 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine and few medium roots; many very fine interstitial and few very fine tubular pores; many thin clay films on faces of peds and lining pores; 45 percent pebbles; neutral (pH 6.8); clear wavy boundary. (4 to 6 inches thick)

Bt2—13 to 21 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores; 35 percent pebbles; neutral (pH 6.8); clear wavy boundary. (6 to 10 inches thick)

Bt3—21 to 32 inches; yellowish brown (10YR 5/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular and subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thin clay films on faces of peds and lining pores; 35 percent pebbles; neutral (pH 6.8); clear wavy boundary. (10 to 12 inches thick)

Bt4—32 to 42 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine interstitial and few very fine tubular pores; many thin clay films coating and bridging sand grains and pebbles; 25 percent pebbles; neutral (pH 6.8); clear wavy boundary. (8 to 12 inches thick)

Btk—42 to 50 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine interstitial and few very fine tubular pores; few thin clay films bridging and coating sand grains and pebbles; 40 percent pebbles; many fine soft masses of lime; violently effervescent in lime masses and slightly effervescent in the matrix; moderately alkaline (pH 8.4); abrupt irregular boundary. (6 to 10 inches thick)

2R—50 to 56 inches; light yellowish brown (10YR 6/4), fractured sandstone, grayish brown (10YR 5/2) moist; yellowish red (5YR 5/6) iron mottles; lime coatings on rock fragments and in cracks.

Type location: Humboldt County, Nevada; approximately 4 miles southeast of Winnemucca, about 2,400 feet west and 700 feet north of the southeast corner of sec. 11, T. 35 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 42 to 47 degrees F
Mollic epipedon: 10 to 16 inches thick
Depth to secondary carbonates: 38 to 42 inches
Depth to bedrock: 40 to 60 inches
Control section: Content of clay—35 to 50 percent; texture—dominantly clay loam or clay; content of rock fragments—35 to 50 percent, mainly pebbles
Reaction throughout the profile: Neutral to moderately alkaline (more alkaline in the lower than in the upper subhorizons)

A horizon:
Chroma—2 or 3
Structure—granular or platy
Consistence—soft or slightly hard

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—dominantly clay loam or clay but includes strata of gravelly or very gravelly sandy loam in the lower part of the horizon

Gwena Series

The Gwena series consists of shallow, well drained, very slowly permeable soils that formed in alluvium derived from mixed rock sources and somewhat influenced by loess and volcanic ash. Gwena soils are on fan piedmont remnants. Slopes are 4 to 15 percent. The mean annual precipitation is about 10 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Nadurargids

Typical pedon: Gwena very fine sandy loam, 4 to 15 percent slopes, in an area of Gwena-Enko-Frewa association:

A1—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; mildly alkaline

(pH 7.8); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 4 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 4 inches thick)

AB—4 to 9 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 5 inches thick)

Btn—9 to 12 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure; hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; very few thin clay films on faces of peds; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 8 inches thick)

Btnk—12 to 17 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; few thin clay films on faces of peds; few fine lime filaments; strongly effervescent; strongly alkaline (pH 8.9); abrupt wavy boundary. (3 to 5 inches thick)

Bqk—17 to 19 inches; very pale brown (10YR 8/4) clay loam, brownish yellow (10YR 6/6) moist; massive; very hard, very firm, sticky and plastic; few very fine roots; common very fine tubular pores; strong, discontinuous cementation; violently effervescent; strongly alkaline (pH 8.9); clear smooth boundary. (0 to 2 inches thick)

Bqkm—19 to 35 inches; very pale brown (10YR 8/3), indurated duripan, light yellowish brown (10YR 6/4) moist; massive; extremely hard, extremely firm; a thin, continuous laminar cap; violently effervescent; strongly alkaline (pH 8.8); clear irregular boundary. (6 to 17 inches thick)

2B'qk—35 to 52 inches; light gray (10YR 7/2) extremely gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, nonsticky and nonplastic; few very fine tubular pores; alternating layers of weak and strong, discontinuous silica and lime cementation; 70 percent pebbles, 5 percent cobbles; lime coatings on the underside of rock fragments; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 18 inches thick)

2C—52 to 60 inches; very pale brown (10YR 7/4) very gravelly loamy coarse sand, yellowish brown (10YR 5/6) moist; single grain; loose, nonsticky and nonplastic; common very fine tubular pores; 55 percent pebbles; strongly effervescent lime coatings on the underside of pebbles; a noneffervescent matrix; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 13 miles northeast of Imlay, about 500 feet west and 1,200 feet south of the northeast corner of sec. 28, T. 33 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist in winter and spring, dry from June through November

Soil temperature: 47 to 52 degrees F

Depth to a duripan: 14 to 20 inches

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Consistence—soft or slightly hard, nonsticky or slightly sticky and nonplastic or slightly plastic
- Reaction—mildly alkaline or moderately alkaline

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—loam or clay loam
- Content of clay—20 to 35 percent
- Content of rock fragments—less than 15 percent, mainly pebbles; as much as 25 percent pebbles in some subhorizons in some pedons
- Structure—prismatic or subangular blocky
- Consistence—slightly sticky or sticky and slightly plastic or plastic
- Reaction—moderately alkaline or strongly alkaline
- Exchangeable sodium—20 to 35 percent

Bqkm horizon:
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 6
- Structure—platy, massive in some pedons
- Thickness of the duripan—6 to 17 inches

Harcany Series

The Harcany series consists of very deep, well drained, moderately permeable soils that formed in a mantle of loess overlying residuum and colluvium weathered from argillite, andesite, quartzite, sandstone, shale, and slate. Harcany soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean

annual precipitation is about 13 inches, and the mean annual temperature is about 37 degrees F.

Taxonomic class: Loamy-skeletal, mixed Pachic Cryoborolls

Typical pedon: Harcany stony silt loam, 30 to 50 percent slopes, in an area of Golsum-Spinlin-Harcany association; in Humboldt County, east part:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) stony silt loam, very dark brown (10YR 2/2) moist; strong very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine interstitial pores; 25 percent pebbles, 5 percent cobbles and stones; neutral (pH 6.6); clear wavy boundary. (3 to 6 inches thick)

A2—4 to 10 inches; dark grayish brown (10YR 4/2) gravelly silt loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine interstitial pores; 25 percent pebbles, 5 percent cobbles and stones; neutral (pH 6.6); clear wavy boundary. (4 to 8 inches thick)

A3—10 to 18 inches; dark grayish brown (10YR 4/2) very gravelly silt loam, very dark brown (10YR 2/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine and medium roots; many very fine interstitial pores; 40 percent pebbles, 15 percent cobbles and stones; neutral (pH 6.6); clear wavy boundary. (6 to 10 inches thick)

2C1—18 to 48 inches; brown (10YR 5/3) extremely gravelly sandy loam, dark brown (10YR 3/3) moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine interstitial and few very fine tubular pores; 60 percent pebbles, 5 percent cobbles and stones; neutral (pH 6.8); clear wavy boundary. (20 to 36 inches thick)

2C2—48 to 72 inches; brown (10YR 5/3) extremely gravelly sandy loam, dark brown (10YR 3/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial and few very fine tubular pores; 50 percent pebbles, 20 percent cobbles and stones; neutral (pH 6.8).

Type location: Humboldt County, Nevada; approximately 6 miles southeast of Winnemucca, about 500 feet west and 900 feet north of the southeast corner of sec. 13, T. 35 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually moist; dry in August and September

Soil temperature: 36 to 41 degrees F

Average soil temperature in summer: 54 to 59 degrees F

Mollic epipedon: 30 to 70 inches thick

Control section: Content of clay—10 to 15 percent; texture—extremely gravelly sandy loam or very gravelly silt loam that has strata of gravelly loam or gravelly silt loam; content of rock fragments—50 to 75 percent, mainly pebbles

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3

2C horizon:
Value—5 or 6 dry
Content of rock fragments—60 to 80 percent, mainly pebbles

Hawsley Series

The Hawsley series consists of very deep, somewhat excessively drained, very rapidly permeable soils that formed in alluvium and eolian deposits derived from mixed rock sources. Hawsley soils are on old, wind-sculptured sand sheets. Slopes are generally 0 to 8 percent, but associated dunes may have short slopes of as much as 50 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is 52 degrees F.

Taxonomic class: Mixed, mesic Typic Torripsamments

Typical pedon: Hawsley fine sand, 2 to 8 percent slopes:

A—0 to 3 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many fine interstitial pores; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 8 inches thick)

C1—3 to 23 inches; pale brown (10YR 6/3) fine sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many fine interstitial pores; moderately alkaline (pH 8.2); clear smooth boundary. (6 to 20 inches thick)

C2—23 to 31 inches; very pale brown (10YR 7/3) fine sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 10 inches thick)

Ck—31 to 60 inches; light gray (10YR 7/2) fine sand, grayish brown (10YR 5.2) moist; single grain; loose,

nonsticky and nonplastic; few very fine roots; many fine interstitial pores; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 4 miles west of Imlay, near Rye Patch Reservoir, about 900 feet south and 2,200 feet west of the northeast corner of sec. 2, T. 32 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods during winter and spring

Soil temperature: 53 to 57 degrees F

Control section: Texture—stratified fine sand to coarse sand, mixed texture commonly of sand but of fine sand in some pedons, thin strata of loamy fine sand in some pedons; content of rock fragments—0 to 15 percent pebbles

A horizon:
- Hue—10YR or 2.5Y
- Value—5, 6, or 7 dry, 3, 4, or 5 moist
- Chroma—2 or 3
- Reaction—neutral to moderately alkaline

C horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Reaction—commonly moderately alkaline or strongly alkaline but is mildly alkaline in the upper part in some pedons
- Effervescence—slightly effervescent to violently effervescent in some subhorizons
- Other features—strata with relict iron oxide stains that have hue of 7.5YR in some pedons

Hoot Series

The Hoot series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum and colluvium weathered from andesite and related volcanic rocks. Hoot soils are on crests and side slopes of mountains. Slopes are 4 to 75 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Haplargids

Typical pedon: Hoot very cobbly loam, 30 to 50 percent slopes, in an area of Hoot-Burrita-Bojo association where pebbles cover approximately 30 percent and cobbles and stones each 25 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine vesicular pores; 20 percent pebbles, 20 percent cobbles and stones; mildly alkaline (pH 7.8); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 4 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine tubular pores; 40 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 7 inches thick)

Bt—4 to 14 inches; light brown (7.5YR 6/4) extremely gravelly clay loam, brown (7.5YR 5/4) moist; weak very fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and few fine roots; many very fine tubular pores; 50 percent pebbles, 15 percent cobbles; common thin clay films on faces of peds and lining pores; mildly alkaline (pH 7.8); abrupt smooth boundary. (3 to 12 inches thick)

R—14 inches; andesite.

Type location: Pershing County, Nevada; in the southern part of the Tobin Range, on the Jersey Valley side, about 2,100 feet east and 400 feet south of the northwest corner of sec. 3, T. 26 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in some part in winter and early spring

Soil temperature: 47 to 53 degrees F

Depth to bedrock: 10 to 20 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3 dry or moist

Bt horizon:
- Hue—10YR or 7.5YR; clay films ranging to 5YR
- Texture—extremely gravelly loam, extremely gravelly clay loam, or very gravelly clay loam
- Content of clay—25 to 35 percent
- Content of rock fragments—50 to 70 percent, mainly pebbles
- Structure—very fine or fine subangular blocky
- Reaction—mildly alkaline to strongly alkaline
- Carbonates—commonly noncalcareous; lime coatings on the underside of rock fragments directly above the bedrock in some pedons

Hopeka Series

The Hopeka series consists of very shallow, excessively drained, moderately permeable soils that formed in residuum weathered from limestone. Hopeka soils are on side slopes of mountains. Slopes are 50 to 75 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic, frigid Lithic Xeric Torriorthents

Typical pedon: Hopeka very gravelly loam, 50 to 75 percent slopes, in an area of Kram-Hopeka-Rock outcrop association where pebbles cover approximately 50 percent, cobbles 10 percent, and stones 1 percent of the surface:

A—0 to 2 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine vesicular pores; 45 percent pebbles, 10 percent cobbles; one-quarter inch of duff, needles, and twigs on the surface; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 4 inches thick)

C—2 to 10 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine and coarse roots; few fine tubular pores; 40 percent pebbles, 10 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 8 inches thick)

R—10 inches; unweathered limestone.

Type location: Pershing County, Nevada; in the Augusta Mountains, about 1,050 feet west and 1,300 feet north of the southeast corner of sec. 14, T. 25 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 43 to 47 degrees F

Control section: Content of clay—18 to 25 percent; content of rock fragments—35 to 60 percent limestone or dolostone pebbles, cobbles, or stones

Depth to bedrock: 4 to 10 inches

Carbonates: Dominantly violently effervescent but strongly effervescent in the surface layer in some pedons; 40 to 85 percent calcium carbonate equivalent

Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3

C horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3
Structure—weak or moderate subangular blocky; massive in some pedons

Humboldt Series

The Humboldt series consists of very deep, poorly drained, moderately slowly permeable soils that formed in silty alluvium derived from mixed rock sources and influenced by volcanic ash. Humboldt soils are on flood plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Fluvaquentic Haplaquolls

Typical pedon: Humboldt silty clay, slightly saline-sodic:

A1—0 to 3 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and few fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 8 inches thick)

A2—3 to 6 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and plastic; many very fine and fine and common medium roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 8 inches thick)

A3—6 to 13 inches; gray (10YR 5/1) silty clay, very dark gray (10YR 3/1) moist; strong fine and medium blocky structure; hard, firm, sticky and plastic; common very fine and few medium roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (5 to 9 inches thick)

C1—13 to 22 inches; gray (10YR 6/1) silty clay, dark gray (10YR 4/1) moist; massive; hard, firm, sticky and plastic; common very fine and fine roots; many very fine, common fine, and few medium tubular pores; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 20 inches thick)

C2—22 to 31 inches; light brownish gray (10YR 6/2) silty clay, dark grayish brown (10YR 4/2) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles;

massive; hard, firm, sticky and plastic; few very fine, fine, and medium roots; many very fine and few fine and medium tubular pores; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (5 to 30 inches thick)

C3—31 to 45 inches; light brownish gray (10YR 6/2) silty clay, dark grayish brown (10YR 4/2) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; massive; hard, firm, sticky and plastic; few very fine, fine, and medium roots; many very fine and fine and common medium tubular pores; strongly effervescent; very strongly alkaline (pH 9.4); gradual smooth boundary. (4 to 17 inches thick)

C4—45 to 60 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; massive; slightly hard, firm, sticky and plastic; few very fine roots; many very fine and fine and common medium tubular pores; strongly effervescent; very strongly alkaline (pH 9.6).

Type location: Pershing County, Nevada; approximately 18 miles southwest of Winnemucca, near the Humboldt River, about 2,500 feet east and 150 feet south of the northwest corner of sec. 15, T. 34 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually dry; usually saturated for 1 month or more during most years unless drained

Soil temperature: 50 to 54 degrees F

Mollic epipedon: 10 to 24 inches thick

Control section: Content of clay—35 to 45 percent; texture—stratified silty clay loam to clay and minor strata of silt loam in some pedons

Reaction throughout the profile: Mildly alkaline to very strongly alkaline, the higher values being only in sodium affected areas

Carbonates: Slightly effervescent to strongly effervescent throughout most pedons but some noneffervescent strata below a depth of 20 inches in some pedons; less than 15 percent calcium carbonate equivalent

Iron mottles: Distinct or prominent iron mottles in the lower part of the mollic epipedon or directly below; if no mottles occur, matrix chroma of 1 or less

Other features: Stratified very fine sandy loam to fine sand below a depth of 30 inches in some pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—dominantly 4 or 5 dry (6 in the upper part in some pedons because of deposition), 2 or 3 moist
- Chroma—1 or 2
- Structure—moderate or strong, fine to coarse, blocky, platy, prismatic, or granular or weak fine to coarse subangular blocky in the Ap horizon
- Consistence—slightly hard or hard
- Organic matter content—2 to 4 percent
- Other features—a buried A horizon in some pedons

C horizon:
- Hue—10YR, 2.5Y, 7.5YR, or N
- Value—dominantly 6 or 7 dry, 3 to 5 moist; 8 dry and 6 moist in volcanic ash layers
- Chroma—0 to 3
- Structure—moderate or strong, prismatic or blocky in the upper part; weak structure or massive in the lower part
- Carbonates—few to many very fine to medium lime concretions or soft segregations in some subhorizons

Isolde Series

The Isolde series consists of very deep, excessively drained, very rapidly permeable soils that formed in sandy eolian material derived from mixed rock sources. Isolde soils are on sand dunes superimposed over lake plain stream terraces and offshore bars. Slopes are 4 to 15 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Mixed, mesic Typic Torripsamments

Typical pedon: Isolde fine sand, 4 to 15 percent slopes, in an area of Isolde-Parran-Appian association:

A—0 to 1 inch; light brownish gray (10YR 6/2) fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; moderately alkaline (pH 8.4); gradual smooth boundary. (0 to 3 inches thick)

C1—1 to 31 inches; light brownish gray (10YR 6/2) fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many very fine and few coarse roots; many very fine interstitial pores; moderately alkaline (pH 8.4); gradual smooth boundary. (3 to 30 inches thick)

C2—31 to 60 inches; light brownish gray (10YR 6/2) fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many very fine and few fine and medium roots; many very fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 14 miles southeast of Lovelock, in the Carson Sink, about 100 feet north and 200 feet

west of the southeast corner of sec. 20, T. 25 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; dry from April through mid-November, moist for short periods from mid-November through March

Soil temperature: 53 to 57 degrees F

Control section: Texture—commonly fine sand but in some pedons 50 to 80 percent sand that passes number 40 sieve and 1 to 10 percent that passes number 200 sieve

Reaction throughout the profile: Neutral to moderately alkaline

Other features: A 2C horizon below a depth of 40 inches in some pedons; moderately alkaline to strongly alkaline and noneffervescent to strongly effervescent in the lower part of the C horizon in some pedons

A horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 or 3

C horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Iver Series

The Iver series consists of very deep, well drained, moderately permeable soils that formed in loess over residual material and colluvium weathered from quartz grit, sandstone, shale, and quartzite. Iver soils are on concave side slopes of mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Coarse-loamy, mixed, frigid Pachic Haploxerolls

Typical pedon: Iver stony silt loam, 30 to 50 percent slopes, in an area of Slaven-Linrose-Iver association where pebbles cover approximately 10 percent and stones 1 percent of the surface:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) stony silt loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common fine interstitial pores; 10 percent pebbles, 1 percent stones; neutral (pH 6.8); clear smooth boundary. (2 to 4 inches thick)

A2—4 to 12 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; many fine tubular pores; neutral (pH 6.8); clear smooth boundary. (8 to 20 inches thick)

AB—12 to 20 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine tubular pores; neutral (pH 6.8); clear smooth boundary. (6 to 12 inches thick)

2Bw1—20 to 31 inches; light yellowish brown (10YR 6/4) gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine tubular pores; 15 percent pebbles, 10 percent cobbles; neutral (pH 7.0); clear smooth boundary. (6 to 15 inches thick)

2Bw2—31 to 60 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine tubular pores; 15 percent pebbles, 35 percent cobbles; neutral (pH 7.0).

Type location: Pershing County, Nevada; in the East Range, about 2,200 feet east and 2,000 feet south of the northwest corner of sec. 22, T. 31 N., R. 36.

Range in Characteristics

Soil moisture: Moist from winter through early summer, dry from July through November

Soil temperature: 42 to 47 degrees F

Mollic epipedon: 20 to 40 inches thick

Depth to lithologic discontinuity: 27 to 38 inches

Control section: Texture—silt loam in the upper part, gravelly silt loam or gravelly loam in the next part, and very gravelly loam, very cobbly loam, or very cobbly very fine sandy loam in the lower part, which averages very cobbly loam or very cobbly very fine sandy loam; content of clay—15 to 18 percent; content of rock fragments—average of 15 to 35 percent, mostly pebbles and cobbles (dominantly cobbles in some subhorizons)

Reaction throughout the profile: Slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3

Bw horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—subangular blocky; massive in some parts of the horizon in some pedons

Jerval Series

The Jerval series consists of very deep, well drained, moderately slowly permeable soils that formed in loess over loamy and gravelly alluvium derived from mixed rock sources. Jerval soils are on fan piedmonts and fan piedmont remnants. Slopes are 2 to 8 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Natrargids

Typical pedon: Jerval stony loam, 2 to 8 percent slopes, in an area of Jerval-Chilper-Bluewing association where pebbles cover approximately 5 percent, cobbles 3 percent, and stones 2 percent of the surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) stony loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine vesicular pores; 5 percent pebbles, 2 percent cobbles, 2 percent stones; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 6 inches thick)

A2—2 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 10 percent pebbles, 1 percent cobbles, 1 percent stones; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 7 inches thick)

Btnk1—6 to 18 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure; hard, friable, sticky and plastic; many very fine roots; few very fine tubular pores; common thin clay films on faces of peds and lining pores; 20 percent pebbles; lime coatings on all sides of pebbles; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (0 to 12 inches thick)

Btnk2—18 to 22 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure; hard, friable, sticky and plastic; few very fine roots; common very fine and few tubular pores; few thin clay films on faces of peds and lining pores; 15 percent pebbles; common fine seams of gypsum and lime and lime coatings on all sides of pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 8 inches thick)

2Bqk—22 to 29 inches; white (10YR 8/2) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 35 percent pebbles; 25 percent strongly cemented durinodes; lime coatings on all sides of pebbles; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 19 inches thick)

2Bk—29 to 60 inches; very pale brown (10YR 7/3) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; many fine interstitial pores; 50 percent pebbles, 5 percent cobbles; lime coatings on all sides of pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 0.5 mile north of the Little McCoy Ranch, in the Jersey Valley, about 1,720 feet east and 3,010 feet south of the northwest corner of sec. 19, T. 26, R. 39 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; dry from late May through November

Soil temperature: 53 to 59 degrees F

Depth to the Bq horizon: 20 to 30 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—platy or granular

Bt horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—gravelly clay loam or gravelly silty clay loam
- Content of clay—27 to 35 percent
- Content of rock fragments—15 to 25 percent, mainly pebbles
- Exchangeable sodium—less than 15 percent in the upper part and 15 to 35 percent in the lower part
- Reaction—moderately alkaline or strongly alkaline
- Other features—segregated secondary carbonates; segregated gypsum commonly in the lower part of the horizon

2Bqk and 2Bk horizons:
- Value—7 or 8 dry, 4 to 6 moist
- Chroma—2, 3, or 4
- Texture—very gravelly sandy loam or very gravelly fine sandy loam
- Content of clay—5 to 12 percent
- Content of rock fragments—35 to 55 percent, mainly pebbles, but also 0 to 5 percent cobbles

Reaction—moderately alkaline or strongly alkaline
Cementation—20 to 30 percent weak and moderately strong durinodes in a friable matrix or weak or strong, discontinuous silica cementation and thin, discontinuous laminae

Jobpeak Series

The Jobpeak series consists of very shallow, well drained, moderately permeable soils that formed in residuum and colluvium weathered from volcanic rocks. Jobpeak soils are on side slopes of mountains. Slopes are 50 to 75 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy-skeletal, mixed, nonacid, mesic Lithic Xeric Torriorthents

Typical pedon: Jobpeak very gravelly loam, 50 to 75 percent slopes, in an area of Jobpeak-Teguro-Rock outcrop association where pebbles cover approximately 50 percent and cobbles 10 percent of the surface:

A1—0 to 2 inches; pinkish gray (5YR 6/2) very gravelly loam, reddish brown (5YR 4/3) moist; weak thin platy structure; soft, very friable, slightly sticky and nonplastic; 60 percent pebbles; slightly effervescent; neutral (pH 7.2); clear smooth boundary. (2 to 4 inches thick)

A2—2 to 5 inches; pinkish gray (5YR 6/2) very gravelly loam, reddish brown (5YR 4/3) moist; weak thin platy structure; soft, very friable, slightly sticky and nonplastic; 45 percent pebbles; neutral (pH 7.0); abrupt irregular boundary. (2 to 8 inches thick)

2R—5 inches; reddish basalt.

Type location: Pershing County, Nevada; in the northern part of the Stillwater Range, about 2,300 feet south and 2,000 feet east of the northwest corner of sec. 15, T. 25 N., R. 36 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry in summer and autumn
Soil temperature: 47 to 52 degrees F
Depth to unweathered bedrock: 4 to 12 inches
Control section: Content of clay—10 to 18 percent; content of rock fragments—35 to 60 percent, predominantly pebbles
Reaction throughout the profile: Neutral or mildly alkaline
A horizon:
Hue—10YR or 2.5Y; hue of 5YR or 7.5YR reflecting bedrock colors in some pedons
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Structure—subangular blocky or platy

Knoss Series

The Knoss series consists of shallow, well drained, slowly permeable soils that formed in mixed alluvium. Knoss soils are on fan piedmont remnants and partial ballenas. Slopes are 2 to 8 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 51 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Typic Nadurargids

Typical pedon: Knoss cobbly very fine sandy loam, 2 to 8 percent slopes, in an area of Jerval-Knoss-Chilper association where pebbles cover approximately 5 percent, cobbles 16 percent, and stones 1 percent of the surface:

A1—0 to 2 inches; light gray (10YR 7/2) cobbly very fine sandy loam, grayish brown (10YR 5/2) moist; strong thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many fine and medium vesicular pores; 10 percent pebbles, 8 percent cobbles; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 7 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots; many fine tubular pores; 10 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (0 to 6 inches thick)

Btnk—7 to 15 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; strong fine prismatic structure; hard, firm, very sticky and very plastic; common very fine roots; few very fine tubular pores; many thin clay films on faces of peds; 5 percent pebbles; common fine irregular lime seams; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (5 to 15 inches thick)

Bqkm—15 to 52 inches; very pale brown (10YR 8/3), indurated, silica- and lime-cemented duripan that has a continuous, thin laminar cap; very pale brown (10YR 7/4) moist; strong thick platy structure; extremely hard, extremely firm; 40 percent pebbles, 3 percent cobbles, 3 percent stones; violently effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary. (10 to 40 inches thick)

C—52 to 60 inches; pale brown (10YR 6/3) extremely gravelly loamy sand, brown (10YR 4/3) moist; massive in places; loose, nonsticky and nonplastic; many fine interstitial pores; 65 percent pebbles, 5 percent cobbles; very thin lime coatings on rock fragments; violently effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; approximately 40 miles southeast of Mill City, in Buena Vista Valley, about 1,250 feet east and 1,300 feet north of the southwest corner of sec. 27, T. 26 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist for short periods from winter through early spring, dry from late May through November

Soil temperature: 53 to 57 degrees F

Depth to an indurated duripan: 14 to 20 inches

Depth to segregated lime: 2 to 8 inches

Control section: Content of clay—40 to 60 percent; content of rock fragments—0 to 15 percent, mainly pebbles

A horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Reaction—moderately alkaline or strongly alkaline
- Other features—noneffervescent in some pedons

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry
- Chroma—3 or 4
- Structure—prismatic; massive when moist
- Other features—a thin gravelly Bt subhorizon in some pedons
- Carbonates—a strongly effervescent matrix; segregated lime commonly throughout the horizon
- Exchangeable sodium—35 to 60 percent

Bqkm horizon:
- Structure—platy; massive in some pedons

Knott Series

The Knott series consists of shallow, well drained, slowly permeable soils that formed in alluvium weathered from mixed rock sources and somewhat influenced by loess high in content of volcanic ash. Knott soils are on fan piedmont remnants and ballenas. Slopes are 2 to 30 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Typic Nadurargids

Typical pedon: Knott gravelly very fine sandy loam, 8 to 15 percent slopes, in an area of Knott-Sodhouse-Wholan association where pebbles cover approximately 20 percent, cobbles 5 percent, and stones 1 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 20 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 6 inches thick)

A2—2 to 4 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine vesicular pores; 15 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (0 to 4 inches thick)

Btn—4 to 11 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure; hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thin clay films on faces of peds and lining pores; 10 percent pebbles; moderately alkaline (pH 8.4); gradual smooth boundary. (4 to 8 inches thick)

Btnk—11 to 18 inches; light brown (7.5YR 6/4) gravelly clay, brown (7.5YR 5/4) moist; moderate medium prismatic structure; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; many thin clay films on faces of peds and lining pores; 20 percent pebbles, 5 percent cobbles; common medium lime seams; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (3 to 8 inches thick)

Bqkm—18 to 34 inches; white (10YR 8/2), indurated duripan, very pale brown (10YR 7/3) moist; massive; extremely hard, extremely firm; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (4 to 20 inches thick)

Ck—34 to 60 inches; light gray (10YR 7/2) very gravelly coarse sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; many fine interstitial pores; 45 percent pebbles, 10 percent cobbles; lime coatings on rock fragments; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 16 miles southwest of Valmy, in the northern part of Buffalo Valley, about 1,900 feet west and 1,500 feet north of the southeast corner of sec. 21, T. 32 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist for short periods in winter and spring, dry from June through November

Soil temperature: 47 to 52 degrees F

Depth to a duripan: 10 to 20 inches
Control section: Content of clay—35 to 50 percent; content of rock fragments—10 to 30 percent, mainly pebbles

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Reaction—neutral or mildly alkaline

Btn horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6
Texture—gravelly clay, gravelly clay loam, or clay
Content of rock fragments—5 to 30 percent, mainly pebbles
Reaction—moderately alkaline or strongly alkaline
Exchangeable sodium—15 to 35 percent
Other features—no segregated lime in the lower part of the horizon in some pedons

Bqkm horizon:
Hue—10YR or 7.5YR
Value—6 to 8 dry or moist
Chroma—2 to 4
Structure—generally platy near the upper boundary, massive below
Reaction—moderately alkaline or strongly alkaline

Ck horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 to 4
Texture—very gravelly sandy loam, very gravelly coarse sandy loam, or very gravelly loamy sand
Content of clay—4 to 10 percent
Content of rock fragments—40 to 60 percent, mainly pebbles
Structure—massive or single grain

Kram Series

The Kram series consists of very shallow, somewhat excessively drained, moderately permeable soils that formed in residuum weathered from limestone. Kram soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 10 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents

Typical pedon: Kram very gravelly very fine sandy loam, 30 to 50 percent slopes, in an area of Kram-Hopeka-Rock outcrop association where pebbles cover approximately 50 percent, cobbles 10 percent, and stones 1 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very gravelly very fine sandy loam, dark brown (10YR 4/3) moist; common very thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common fine vesicular pores; 45 percent pebbles, 5 percent cobbles; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 2 inches thick)
A2—2 to 5 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine tubular pores; 35 percent pebbles, 5 percent cobbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 3 inches thick)
C—5 to 8 inches; light yellowish brown (2.5Y 6/4) very gravelly loam, olive brown (2.5Y 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; 45 percent pebbles, 15 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (3 to 10 inches thick)
R—8 inches; hard, fractured limestone.

Type location: Pershing County, Nevada; in the Augusta Mountains, about 1,700 feet north and 300 feet west of the southeast corner of sec. 14, T. 25 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; dry from mid-June through October
Soil temperature: 49 to 52 degrees F
Control section: Content of clay—8 to 18 percent; content of rock fragments—average of 40 to 50 percent pebbles and 5 to 10 percent cobbles and stones
Depth to bedrock: 8 to 14 inches
Reaction throughout the profile: Moderately alkaline or strongly alkaline
Calcium carbonate equivalent: 40 to 50 percent throughout the profile (in the fraction less than 20 millimeters in size)

A horizon:
Value—4, 5, or 6 dry, 3 or 4 moist
Chroma—2 or 3
Content of rock fragments—35 to 45 percent pebbles and 5 to 10 percent cobbles and stones
Structure—granular or platy
Effervescence—slightly effervescent to violently effervescent

C horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3 or 4 moist

Chroma—2, 3, or 4
Texture—very gravelly very fine sandy loam or very gravelly loam
Content of rock fragments—45 to 55 percent pebbles and 5 to 10 percent cobbles and stones
Structure—subangular blocky; massive in some pedons
Effervescence—strongly effervescent or violently effervescent

Laped Series

The Laped series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum and colluvium weathered from rhyolitic tuff, andesite, and basalt. Laped soils are on low hills. Slopes are 30 to 50 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durargids

Typical pedon: Laped very cobbly loam, 30 to 50 percent slopes, in an area of Laped-Colbar association where pebbles cover approximately 20 percent, cobbles 15 percent, and stones 2 percent of the surface:

A1—0 to 2 inches; very pale brown (10YR 7/3) very cobbly loam, brown (10YR 5/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine vesicular pores; 15 percent pebbles, 25 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 4 inches thick)

A2—2 to 5 inches; very pale brown (10YR 7/3) very cobbly loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 20 percent pebbles, 25 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 4 inches thick)

AB—5 to 8 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 20 percent pebbles, 5 percent cobbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 4 inches thick)

Bt—8 to 12 inches; light brown (7.5YR 6/4) gravelly clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine tubular pores; many thin clay films on faces of peds and lining pores; 20 percent pebbles, 2 percent cobbles; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 7 inches thick)

Btk—12 to 18 inches; light brown (7.5YR 6/4) gravelly clay loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; few very fine tubular pores; common thin clay films on faces of peds and lining pores; 30 percent pebbles, 2 percent cobbles; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 6 inches thick)

Bqkm—18 to 22 inches; white (10YR 8/2), indurated duripan, very pale brown (10YR 7/3) moist; massive; extremely hard, extremely firm; violently effervescent; abrupt wavy boundary. (3 to 10 inches thick)

2R—22 inches; hard bedrock.

Type location: Pershing County, Nevada; in the western part of the Fish Creek Mountains, about 600 feet east and 900 feet north of the southwest corner of sec. 4, T. 26 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist for short periods in winter and early spring, dry from May through October

Soil temperature: 47 to 51 degrees F

Thickness of the solum and depth to a duripan: 14 to 20 inches

Depth to bedrock: 20 to 30 inches

Control section: Content of clay—27 to 35 percent; content of rock fragments—15 to 35 percent, mainly pebbles

Other features: A thin Bqk horizon above the duripan in some pedons

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2, 3, or 4

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3, 4, or 5 moist
Chroma—4 to 6
Reaction—dominantly moderately alkaline, but strongly alkaline in the lower part of the horizon in some pedons
Sodium adsorption ratio—2 to 10, generally becoming more concentrated with depth
Carbonates—a noneffervescent or slightly effervescent matrix that has secondary carbonates occurring as filaments or coatings in the lower part of the horizon in most pedons

Layview Series

The Layview series consists of shallow, well drained, moderately permeable soils that formed in residuum and colluvium weathered from andesite, rhyolite, and tuff. Layview soils are on crests and side slopes of mountains. Slopes are 4 to 75 percent. The mean annual precipitation is 14 inches, and the mean annual temperature is 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed Argic Lithic Cryoborolls

Typical pedon: Layview very gravelly loam, 50 to 75 percent slopes, in an area of Layview, very steep-Tusel-Layview association where pebbles cover approximately 70 percent, cobbles 5 percent, and stones 5 percent of the surface:

A—0 to 2 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine vesicular pores; 45 percent pebbles, 5 percent cobbles, 5 percent stones; neutral (pH 7.0); clear smooth boundary. (1 to 3 inches thick)

AB—2 to 7 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; few very fine tubular pores; 30 percent pebbles, 10 percent cobbles, 5 percent stones; neutral (pH 7.0); clear smooth boundary. (2 to 5 inches thick)

Bt1—7 to 11 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 50 percent pebbles, 5 percent cobbles; few thin clay films on faces of peds and lining pores; neutral (pH 7.0); abrupt wavy boundary. (3 to 10 inches thick)

Bt2—11 to 14 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine and fine tubular pores; 45 percent pebbles, 10 percent cobbles; common thin clay films on faces of peds and lining pores; neutral (pH 7.0); abrupt wavy boundary. (0 to 8 inches thick)

2R—14 inches; rhyolite.

Type location: Pershing County, Nevada; near Mount Tobin, in the Tobin Range, about 2,100 feet south and 500 feet east of the northwest corner of sec. 19, T. 29 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually moist; generally dry in summer and fall, moist from mid-October through mid-July
Soil temperature: 43 to 47 degrees F
Average soil temperature in summer: 50 to 59 degrees F
Mollic epipedon: 7 to 12 inches thick
Depth to bedrock: 10 to 14 inches
Control section: Content of clay—18 to 30 percent; content of rock fragments—35 to 60 percent, mainly pebbles
Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
- Value—4 or 5 dry, 2 or 3 moist
- Chroma—2 or 3
- Structure—weak or moderate, subangular blocky or platy

Bt horizon:
- Value—4 or 5 dry, 3 or 4 moist
- Chroma—2 to 4
- Texture—very gravelly loam or very gravelly clay loam
- Content of clay—22 to 35 percent
- Structure—weak or moderate, subangular or angular blocky
- Content of rock fragments—35 to 60 percent, mainly pebbles

Linrose Series

The Linrose series consists of moderately deep, well drained, moderately permeable soils that formed in residuum and colluvium weathered from shale, chert, argillite, and quartzite. Linrose soils are on side slopes of mountains. Slopes are 50 to 75 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Haploxerolls

Typical pedon: Linrose gravelly loam, 50 to 75 percent slopes, in an area of Slaven-Linrose-Iver association where pebbles cover approximately 45 percent, cobbles 5 percent, and stones 1 percent of the surface:

A1—0 to 2 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 45 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.4);

clear smooth boundary. (1 to 3 inches thick)
A2—2 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 25 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (1 to 4 inches thick)
AB—5 to 10 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; 45 percent pebbles, 2 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary. (2 to 8 inches thick)
Bk—10 to 23 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; common fine tubular pores; 50 percent pebbles, 2 percent cobbles; few thin lime pendants on rock fragments; mildly alkaline (pH 7.6); abrupt smooth boundary. (12 to 33 inches thick)
2R—23 inches; unweathered chert.

Type location: Pershing County, Nevada; approximately 2 miles south of Mount Tobin, in the Tobin Range, about 300 feet east and 2,000 feet south of the northwest corner of sec. 28, T. 29 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; moist in winter and spring, dry from July through October
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 7 to 15 inches thick
Depth to unweathered bedrock: 20 to 40 inches
Control section: Texture—very gravelly loam or very gravelly sandy loam; content of clay—average of 18 to 27 percent; content of rock fragments—average of 35 to 60 percent, mainly pebbles
Reaction throughout the profile: Mildly alkaline or moderately alkaline

A horizon:
Chroma—2 or 3

Bk horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry, 2 to 4 moist
Carbonates—a noneffervescent or slightly effervescent matrix; lime coatings on the underside of rock fragments

Locane Series

The Locane series consists of shallow, well drained, slowly permeable soils that formed in residuum weathered from granitic bedrock. Locane soils are on side slopes of mountains. Slopes are 50 to 75 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 45 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids

Typical pedon: Locane cobbly loam, 50 to 75 percent slopes, in an area of Locane-Rock outcrop association where pebbles cover approximately 20 percent, cobbles 25 percent, and stones 10 percent of the surface:

A—0 to 2 inches; light brownish gray (10YR 6/2) cobbly loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular and common fine vesicular pores; 10 percent pebbles, 20 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary. (1 to 6 inches thick)
Bt1—2 to 7 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine tubular pores; 35 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds; mildly alkaline (pH 7.4); clear smooth boundary. (1 to 5 inches thick)
Bt2—7 to 16 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and very plastic; common very fine and fine roots; many very fine tubular pores; 35 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds; neutral (pH 7.2); abrupt smooth boundary. (5 to 12 inches thick)
R—16 inches; granite.

Type location: Pershing County, Nevada; in the southern part of the East Range, about 2,400 feet west and 2,000 feet north of the southeast corner of sec. 29, T. 28 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Depth to bedrock: 10 to 20 inches
Reaction throughout the profile: Slightly acid or neutral

A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3

Structure—granular, platy, or subangular blocky
Consistence—slightly hard or hard

Bt horizon:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4
Structure—weak to strong, angular or subangular blocky
Thickness—7 to 15 inches
Content of clay—35 to 50 percent
Content of rock fragments—average of 35 to 50 percent

Madeline Series

The Madeline series consists of shallow, well drained, slowly permeable soils that formed in residuum and colluvium weathered from tuff, basalt, and andesite. Madeline soils are on side slopes of plateaus. Slopes are 15 to 30 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 42 degrees F.

Taxonomic class: Clayey, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Madeline very stony loam, 15 to 30 percent slopes, in an area of Millerlux-Ninemile-Madeline association where pebbles cover approximately 5 percent, cobbles 5 percent, and stones 5 percent of the surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very stony loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial and few very fine tubular pores; 10 percent pebbles, 2 percent cobbles, 10 percent stones; neutral (pH 7.0); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 6 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and coarse roots; common very fine interstitial and few very fine tubular pores; 10 percent pebbles, 5 percent cobbles; neutral (pH 7.0); clear smooth boundary. (4 to 7 inches thick)

Bt—6 to 13 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine and common coarse roots; common very fine tubular pores; many thin clay films on faces of peds and lining pores; few moderately thick clay films on faces of peds; 10 percent pebbles; neutral (pH 7.2); clear smooth boundary. (4 to 9 inches thick)

Btk—13 to 17 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 3/4) moist; strong fine and medium angular blocky structure; hard, firm, very sticky and plastic; few very fine and fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 20 percent pebbles; few fine lime filaments in the matrix and few lime coatings on pebbles; slightly effervescent; neutral (pH 7.2); abrupt wavy boundary. (1 to 6 inches thick)

2R—17 inches; basalt.

Type location: Pershing County, Nevada; in the northern part of the Stillwater Range, about 1,000 feet north and 1,300 feet west of the southeast corner of sec. 25, T. 25 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from July through October

Soil temperature: 43 to 47 degrees F

Mollic epipedon: 7 to 15 inches thick; includes part or all of the argillic horizon

Depth to bedrock: 10 to 20 inches

Control section: Content of clay—35 to 60 percent; content of rock fragments—5 to 35 percent

A horizon:
Hue—5YR to 10YR moist or dry
Value—mainly 4 or 5 dry, 2 or 3 moist; 6 dry and 4 moist in a thin subhorizon in some pedons
Chroma—1 to 3 dry or moist
Structure—weak to strong, platy, granular, or subangular blocky
Reaction—slightly acid or neutral

Bt1 horizon (not in all pedons):
Hue—5YR to 10YR moist or dry
Value—3 to 5 dry
Chroma—2 or 3 moist or dry
Texture—sandy clay loam, sandy clay, or clay loam that has 25 to 40 percent clay
Structure—weak to strong, prismatic or subangular or angular blocky
Consistence—slightly hard or hard
Reaction—slightly acid or neutral

Bt2 and Bt3 horizons:
Hue—5YR to 10YR moist or dry
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay, sandy clay, or clay loam that has 35 to 60 percent clay and 5 to 35 percent rock

fragments, including stones, cobbles, and pebbles
Structure—weak to strong, prismatic or subangular or angular blocky
Consistence—hard to extremely hard, friable to very firm
Reaction—slightly acid to mildly alkaline

This pedon is a taxadjunct to the Madeline series because it has lime filaments and lime coatings on rock fragments in the lower part of the Bt horizon, directly above the bedrock. Madeline soils typically have no lime.

Mazuma Series

The Mazuma series consists of very deep, well drained, moderately rapidly permeable soils that formed in alluvium and lacustrine material derived from mixed rock sources. Mazuma soils are on fan skirts and lake plain terraces. Slopes are 0 to 8 percent. The mean annual precipitation is about 6 inches, and average annual temperature is about 50 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Mazuma silt loam, strongly saline-sodic, 0 to 2 percent slopes, in an area of Toulon-Mazuma-Bluewing association:

A1—0 to 3 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many very fine and common fine vesicular pores; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 4 inches thick)

A2—3 to 10 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (3 to 8 inches thick)

AB—10 to 13 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine tubular pores; few thin lenses of stratified loam to loamy sand; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 4 inches thick)

Bk—13 to 22 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine tubular pores; common fine distinct brown (7.5YR 5/4) relict mottles; few fine soft masses of lime; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (5 to 10 inches thick)

C1—22 to 34 inches; pale brown (10YR 6/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 20 percent pebbles; thin strata of loamy sand; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (8 to 12 inches thick)

C2—34 to 42 inches; light gray (2.5Y 7/2) loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine tubular pores; 10 percent pebbles; few fine distinct dark yellowish brown (10YR 4/4) relict mottles; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (6 to 10 inches thick)

C3—42 to 60 inches; light brownish gray (2.5Y 6/2) gravelly loam, light brownish gray (2.5Y 6/2) moist; massive; hard, firm, slightly sticky and slightly plastic; many very fine tubular pores; 25 percent pebbles; violently effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; in the eastern part of Buena Vista Valley, about 100 feet west and 100 feet north of the southeast corner of sec. 8, T. 29 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; moist for intermittent periods in winter and spring
Soil temperature: 53 to 57 degrees F
Control section: Content of clay—5 to 15 percent; texture—stratified sandy loam, fine sandy loam, very fine sandy loam, or silt loam that in some pedons has thin strata of clay loam or strata of coarse sand, very coarse sand, or loamy sand as much as 10 inches thick; content of rock fragments—as much as 25 percent pebbles in a few strata; electrical conductivity—more than 2 millimhos; exchangeable sodium—15 to 35 percent

A horizon:
Hue—10YR or 2.5Y
Value—5, 6, or 7 dry, 4, 5, or 6 moist
Chroma—2, 3, or 4

Bk horizon:
Hue—10YR or 2.5Y
Value—5, 6, or 7 dry, 4, 5, or 6 moist
Chroma—2, 3, or 4

Other features—less than 3 percent calcium carbonate equivalent

C horizon:
Hue—10YR or 2.5Y
Value—5, 6, or 7 dry, 4, 5, or 6 moist
Chroma—2, 3, or 4
Reaction—moderately alkaline to very strongly alkaline
Segregated lime—few fine or medium calcium carbonate concretions in some horizons in some pedons
Unconformable material—lacustrine silts and clays below a depth of 40 inches in some pedons
Other features—salt crystals and relict mottles in the lower part of the C horizon in some pedons

McConnel Series

The McConnel series consists of very deep, somewhat excessively drained, moderately permeable soils that formed in alluvium derived from mixed rock sources and in a component of loess and volcanic ash over gravelly alluvium. McConnel soils are on inset fans. Slopes are 0 to 2 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Sandy-skeletal, mixed, mesic Xerollic Camborthids

Typical pedon: McConnel loam, 0 to 2 percent slopes:

A1—0 to 2 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; mildly alkaline (pH 7.4); abrupt wavy boundary.

A2—2 to 10 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; neutral (pH 7.2); clear wavy boundary.

Bw—10 to 20 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; mildly alkaline (pH 7.6); clear wavy boundary.

2Bk1—20 to 33 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; 60 percent pebbles; thin patchy lime coatings on pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk2—33 to 60 inches; light gray (10YR 7/2) extremely gravelly loamy coarse sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; 65 percent pebbles; lime on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 18 miles south of Winnemucca, in Grass Valley, about 2,000 feet north and 1,200 feet east of the southwest corner of sec. 22, T. 33 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 50 to 54 degrees F
Control section: Content of clay—average of as much as 5 percent; content of rock fragments—average of 50 to 80 percent, mainly pebbles
Depth to the 2Bk horizon: 10 to 20 inches

A horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist (5 dry and 3 moist only in the uppermost 3 inches)
Chroma—1 to 3
Structure—weak or moderate, thin to thick platy or granular; massive in some pedons
Reaction—neutral to moderately alkaline

Bw horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 (1 where the horizon has dark sand grains)
Texture—loam, sandy loam, or fine sandy loam
Structure—very fine to medium, granular or subangular blocky
Reaction—neutral to moderately alkaline

2Bk horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Texture—stratified very gravelly sandy loam to extremely gravelly coarse sand
Chroma—2 to 4 (1 where the horizon has dark sand grains)
Reaction—moderately alkaline to very strongly alkaline

Millerlux Series

The Millerlux series consists of shallow, well drained, very slowly permeable soils that formed in residuum and colluvium weathered from basalt and tuff and in a minor component of loess. Millerlux soils are on the summits of basalt plateaus. Slopes are 4 to 15 percent. The mean annual precipitation is about 10 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Clayey, montmorillonitic, frigid Lithic Xerollic Haplargids

Typical pedon: Millerlux very stony loam, 4 to 15 percent slopes, in an area of Millerlux-Ninemile-Madeline association where pebbles cover approximately 15 percent, cobbles 5 percent, and stones 6 percent of the surface:

A—0 to 2 inches; light gray (10YR 7/2) very stony loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; slightly hard, very friable, sticky and slightly plastic; few very fine roots; few very fine interstitial and vesicular pores; 6 percent stones, 5 percent cobbles, 15 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 6 inches thick)

AB—2 to 6 inches; pale brown (10YR 6/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.1); abrupt wavy boundary. (0 to 6 inches thick)

Bt—6 to 13 inches; pale brown (10YR 6/3) clay, dark brown (10YR 3/3) moist; strong fine and medium angular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; common moderately thick clay films on faces of peds and lining pores; few thin clay films on faces of peds; 5 percent pebbles; moderately alkaline (pH 8.3); clear smooth boundary. (3 to 7 inches thick)

Btk—13 to 18 inches; brown (10YR 5/3) gravelly clay, dark brown (10YR 4/3) moist; strong fine and medium angular blocky structure; hard, firm, very 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 lining pores and few thick clay films on faces of peds; 25 percent pebbles; thin lime coatings on the underside of some pebbles; moderately alkaline (pH 8.3); abrupt wavy boundary. (2 to 7 inches thick)

2R—18 inches; basalt.

Type location: Pershing County, Nevada; in the northern part of the Stillwater Range, about 200 feet north and 2,300 feet west of the southeast corner of sec. 25, T. 25 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually dry during the growing season; dry from late June through mid-October, moist in winter and spring

Soil temperature: 43 to 47 degrees F

Depth to bedrock: 12 to 20 inches

A horizon:
- Value—5, 6, or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Reaction—generally neutral or mildly alkaline; moderately alkaline in some pedons

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3, 4, or 5 moist
- Chroma—generally 3, 4, or 6 but may be 2 dry in the upper part
- Content of clay—40 to 60 percent
- Structure—fine to coarse, prismatic or angular blocky
- Content of rock fragments—less than 15 percent, mainly pebbles
- Reaction—neutral to moderately alkaline

Btk horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—clay or clay loam
- Content of clay—35 to 50 percent
- Content of rock fragments—10 to 30 percent, mainly pebbles
- Structure—prismatic or angular blocky
- Reaction—moderately alkaline or strongly alkaline

Misad Series

The Misad series consists of very deep, well drained, moderately rapidly permeable soils that formed in alluvium derived from mixed rock sources. Misad soils are on fan skirts and inset fans. Slopes are 0 to 15 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Misad gravelly very fine sandy loam, 0 to 2 percent slopes, in an area of Misad-Snapp-Oxcorel association:

A1—0 to 4 inches; light brownish gray (10YR 6/2) gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine vesicular pores; 20 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 5 inches thick)

A2—4 to 11 inches; light brownish gray (10YR 6/2) gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly

hard, very friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine tubular pores; 15 percent pebbles; lime coatings on the underside of pebbles; slightly effervescent; strongly alkaline (pH 8.8); clear wavy boundary. (3 to 10 inches thick)

Bqk1—11 to 18 inches; pale brown (10YR 6/3) gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; common very fine tubular pores; 20 percent pebbles; 25 percent durinodes; lime coatings on the underside of pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (5 to 10 inches thick)

Bqk2—18 to 28 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; common very fine tubular pores; 50 percent pebbles, 5 percent cobbles; 20 percent durinodes; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (8 to 15 inches thick)

2Cq—28 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; loose, nonsticky and nonplastic; common fine and very fine roots; 60 percent pebbles, 5 percent cobbles; weak, discontinuous silica-cemented lenses; strongly effervescent; moderately alkaline (pH 8.0).

Type location: Pershing County, Nevada; in the western part of the Fish Creek Mountains, about 500 feet east and 2,400 feet north of the southwest corner of sec. 18, T. 29 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and early spring

Soil temperature: 47 to 51 degrees F

Depth to the Bqk horizon with more than 20 percent durinodes: 8 to 25 inches

Depth to the unconformable 2C horizon: 20 to 35 inches

Control section: Texture—stratified sandy loam, fine sandy loam, very fine sandy loam, loamy coarse sand, or loamy sand; content of rock fragments—35 to 50 percent, mainly pebbles

Carbonates: Normally calcareous; commonly noneffervescent in the surface layer or in the lower part of the profile

Relict iron mottles: Common in any horizon below a depth of 7 inches

A horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 or 3

B horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—2, 3, or 4

Bq horizon:
Durinodes—10 to 40 percent, weakly or strongly cemented

2C horizon:
Texture—stratified loamy sand, sand, or loamy coarse sand
Content of rock fragments—50 to 70 percent, mainly pebbles
Cementation—commonly discontinuous, weakly or strongly silica-cemented lenses between pebbles in any layer
Effervescence—noneffervescent to strongly effervescent

Misad Variant

The Misad Variant consists of very deep, well drained, moderately permeable soils that formed in loess over alluvium derived from mixed rock sources. Misad Variant soils are on beach terraces and beach plains. Slopes are 2 to 15 percent. The mean annual precipitation is 5 to 8 inches, and the mean annual temperature is 46 to 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Misad Variant gravelly very fine sandy loam, 2 to 8 percent slopes, in an area of Misad Variant-Dun Glen-Misad Variant, strongly sloping, association where pebbles cover approximately 15 percent of the surface:

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine vesicular pores; 15 percent pebbles; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (2 to 4 inches thick)

A2—3 to 8 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak very fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 8 inches thick)

Bqk1—8 to 19 inches; pale brown (10YR 6/3) very fine

sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine tubular pores; 5 percent pebbles; 20 percent 15- to 25-millimeter durinodes; many fine irregular lime filaments; strongly effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (4 to 15 inches thick)

Bqk2—19 to 23 inches; light gray (10YR 7/2) very fine sandy loam, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm, nonsticky and nonplastic; many very fine exped roots; common very fine tubular pores; 10 percent pebbles; weak, discontinuous lime and silica cementation; many fine irregular lime filaments; violently effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary. (2 to 6 inches thick)

2C1—23 to 28 inches; very pale brown (10YR 7/4) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular pores; 65 percent pebbles, 5 percent cobbles; lime coatings on the underside of rock fragments; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (3 to 10 inches thick)

2C2—28 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 65 percent pebbles, 5 percent cobbles; lime coatings on the underside of rock fragments; violently effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; approximately 3 miles east of Mill City, near Dun Glen Creek, about 1,500 feet south and 1,200 feet east of the northwest corner of sec. 34, T. 33 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and early spring

Soil temperature: 47 to 51 degrees F

Depth to durinodes: 8 to 25 inches

Control section: Texture—in the upper part, very fine sandy loam having less than 15 percent pebbles; in the lower part, extremely gravelly sandy loam or extremely gravelly coarse sandy loam; content of rock fragments—average of 60 to 75 percent; reaction—strongly alkaline or very strongly alkaline; nonsaline-sodic to a depth of 23 inches and moderately saline-sodic below that depth

Mulhop Series

The Mulhop series consists of shallow, well drained, moderately permeable soils that formed in residuum and colluvium weathered from dolostone and limestone. Mulhop soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 45 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Xerollic Calciorthids

Typical pedon: Mulhop very gravelly loam, 30 to 50 percent slopes, in an area of Xine-Mulhop-Puffer association where pebbles cover approximately 40 percent, cobbles 10 percent, and stones 5 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine vesicular pores; 35 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 4 inches thick)

A2—2 to 6 inches; grayish brown (10YR 5/2) gravelly loam, dark grayish brown (10YR 4/2) moist; weak very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine and few fine tubular pores; 30 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 6 inches thick)

Bk1—6 to 12 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; few very fine and fine tubular pores; 40 percent pebbles; lime coatings on the underside of pebbles; common fine soft masses of lime; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 8 inches thick)

Bk2—12 to 17 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; few very fine tubular pores; 45 percent pebbles; lime coatings on pebbles; common fine and medium lime filaments; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 5 inches thick)

2R—17 inches; dolostone.

Type location: Pershing County, Nevada; approximately 15 miles south of Imlay, in El Dorado Canyon, about 1,120 feet north and 1,120 feet west of the southeast corner of sec. 25, T. 31 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist from winter through early summer, dry from mid-June through October

Soil temperature: 43 to 47 degrees F

Depth to the calcic horizon: 4 to 10 inches

Depth to bedrock: 14 to 20 inches

Control section: Content of clay—18 to 26 percent; content of rock fragments—35 to 60 percent, mainly pebbles

Calcium carbonate equivalent: 20 to 40 percent in the material less than 20 millimeters in size and 5 to 15 percent in the material less than 2 millimeters in size

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3

Bk horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—mainly very gravelly loam; extremely gravelly loam in some subhorizons
- Structure—subangular blocky; massive in some pedons
- Consistence—soft or slightly hard, very friable or friable, slightly sticky or sticky and slightly plastic or plastic

Needle Peak Series

The Needle Peak series consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in alluvium, loess, and lake sediments derived from mixed rock sources. Needle Peak soils are on flood plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aquic Torriorthents

Typical pedon: Needle Peak silt loam, slightly saline-sodic; in Humboldt County, east part:

A—0 to 4 inches; light brownish gray (2.5Y 6/2) silt loam, very dark grayish brown (2.5Y 3/2) moist; moderate thin platy structure that parts easily to weak very fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and medium roots; many very fine and fine interstitial and few fine vesicular pores; moderately alkaline (pH 8.2); abrupt smooth boundary. (3 to 5 inches thick)

C—4 to 11 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist, dark grayish brown (10YR 4/2) moist and crushed; massive; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (6 to 9 inches thick)

Ck1—11 to 21 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist, dark grayish brown (10YR 4/2) moist and crushed; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine tubular pores; common fine white lime filaments and masses; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (8 to 12 inches thick)

Ck2—21 to 41 inches; light gray (2.5Y 7/2) silt loam, light olive brown (2.5Y 5/4) moist; few fine faint mottles, yellowish brown (10YR 5/4) moist; weak medium and fine subangular blocky structure; hard, friable, sticky and plastic; few fine and very fine roots; many very fine and fine tubular pores; few thin siliceous films lining pores; many fine faint white lime filaments and veins; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (16 to 24 inches thick)

2Ck—41 to 52 inches; white (2.5Y 8/2) silt loam, light brownish gray (2.5Y 6/2) moist; many fine prominent mottles, strong brown (7.5YR 5/6) moist; weak medium platy structure that parts readily to moderate fine subangular blocky; hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine tubular and interstitial pores; few crustacean shells; many fine faint white lime filaments; strongly effervescent; strongly alkaline (pH 9.2); abrupt smooth boundary. (6 to 14 inches thick)

2C—52 to 65 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; common medium prominent mottles, strong brown (7.5YR 5/6) moist; weak thick platy structure that parts readily to strong coarse and medium angular blocky; very hard, firm, sticky and plastic; few very fine and fine roots; few fine and very fine tubular and many very fine and fine interstitial pores; common crustacean shells; strongly effervescent; strongly alkaline (pH 9.0).

Type location: Humboldt County, Nevada; approximately 8.5 miles southwest of Winnemucca,

about 500 feet south and 100 feet east of the north quarter corner of sec. 35, T. 35 N., R. 37 E.

Range in Characteristics

Soil moisture: A seasonal high water table at a depth of 4 to 6 feet
Soil temperature: 47 to 52 degrees F
Control section: Content of clay—20 to 35 percent; texture—silt loam or silty clay loam
Depth to lime: Less than 10 inches
Other features: Mottles below a depth of 20 inches in most pedons

A horizon:
Hue—10YR or 2.5Y
Value—3 or 4 moist
Chroma—2 or 3
Structure—platy or subangular blocky
Reaction—mildly alkaline to strongly alkaline
Other features—slightly effervescent in some pedons

C horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 or 3
Structure—angular or subangular blocky; massive in some pedons
Reaction—moderately alkaline to very strongly alkaline

Ninch Series

The Ninch series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils that formed in sandy eolian deposits over alluvium and lacustrine sediments high in content of volcanic ash. Ninch soils are on sand sheets and partially stabilized dunes deposited on lake plain terraces and fan skirts. Slopes are 0 to 15 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Sandy, mixed, mesic Durorthidic Xeric Torrifluvents

Typical pedon: Ninch fine sand, 0 to 15 percent slopes; in Humboldt County, east part:

A—0 to 6 inches; light brownish gray (10YR 6/2) fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine interstitial pores; neutral (pH 7.0); clear smooth boundary. (4 to 7 inches thick)

C—6 to 25 inches; light brownish gray (2.5Y 6/2) fine sand, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots and few saltgrass rhizomes; many very fine interstitial pores; neutral (pH 7.2); clear wavy boundary. (14 to 22 inches thick)

Cq—25 to 35 inches; light brownish gray (2.5Y 6/2) loamy fine sand, dark grayish brown (2.5Y 4/2) moist; massive; hard, friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular and many very fine interstitial pores; 25 percent very hard, firm durinodes one-quarter to one-half inch thick; mildly alkaline (pH 7.8); clear wavy boundary. (8 to 14 inches thick)

Cqk—35 to 41 inches; light brownish gray (2.5Y 6/2) fine sandy loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine and few fine tubular and many very fine interstitial pores; 25 percent hard, firm durinodes one-quarter to three-quarters of an inch thick; few thin silica coatings lining pores and occurring as discontinuous laminae; a slightly effervescent matrix; few fine and medium white (10YR 8/2), strongly effervescent lime coatings on silica laminae; strongly alkaline (pH 8.8); clear wavy boundary. (5 to 10 inches thick)

2Cqk—41 to 70 inches; light gray (2.5Y 7/2) very fine sandy loam, grayish brown (2.5Y 5/2) moist; pockets and seams of light brownish gray (2.5Y 6/2) material; massive; very hard, firm, brittle; few very fine and fine roots; few fine and many very fine tubular pores; common thin silica films lining pores and occurring as discontinuous laminae; weak silica cementation in pockets and seams; strongly effervescent lime coatings on silica laminae and lining pores; very strongly alkaline (pH 9.6).

Type location: Humboldt County, Nevada; approximately 2.5 miles northwest of the Winnemucca airport, about 600 feet south and 2,340 feet west of the northeast corner of sec. 20, T. 36 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and early spring
Soil temperature: 52 to 57 degrees F
Depth to the Cq horizon: 18 to 36 inches
Depth to carbonates: 20 to 40 inches
Control section: Content of clay—5 to 10 percent; texture—averages loamy fine sand but is stratified with textures ranging from sand to very fine sandy loam and silt loam

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3
Reaction—neutral to moderately alkaline

Cq horizon:
Hue—10YR to 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Content of clay—5 to 10 percent
Consistence—soft to hard, very friable to firm
Reaction—neutral to moderately alkaline in the noncalcareous upper part, strongly alkaline or very strongly alkaline in the calcareous lower part
Cementation—20 to 60 percent hard or very hard, firm or very firm durinodes; weakly cemented layers below a depth of 40 inches in some pedons
Other features—below a depth of 40 inches in some pedons, unconformable loamy or silty lacustrine sediments that are weakly silica-cemented or contain durinodes, are hard or very hard and firm or very firm, and have hue of 2.5Y or 5Y

Ninemile Series

The Ninemile series consists of shallow, well drained, very slowly permeable soils that formed in residuum and colluvium weathered from basalt and tuff. Ninemile soils are on broad plateau summits. Slopes are 4 to 15 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey, montmorillonitic, frigid Lithic Argixerolls

Typical pedon: Ninemile very stony loam, 4 to 15 percent slopes, in an area of Millerlux-Ninemile-Madeline association where pebbles cover approximately 5 percent, cobbles 5 percent, and stones 5 percent of the surface:

A1—0 to 1 inch; grayish brown (10YR 5/2) very stony loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular and few very fine interstitial pores; 5 percent pebbles, 5 percent cobbles, 5 percent stones; neutral (pH 7.2); clear smooth boundary. (1 to 4 inches thick)

A2—1 to 7 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 15 percent pebbles; neutral (pH 7.2); abrupt wavy boundary. (3 to 7 inches thick)

Bt—7 to 14 inches; yellowish brown (10YR 5/4) gravelly clay, yellowish brown (10YR 5/4) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many moderately thick and few thick clay films on faces of peds and lining pores; 25 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

2R—14 inches; hard basalt.

Type location: Pershing County, Nevada; in the northern part of the Stillwater Range, about 200 feet north and 2,300 feet east of the southwest corner of sec. 25, T. 25 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 7 to 15 inches thick; commonly includes part or all of the argillic horizon
Depth to bedrock: 10 to 20 inches
Control section: Content of clay—average of 40 to 60 percent; reaction—slightly acid to mildly alkaline
Other features: Bedrock weathered in the uppermost 1 to 3 inches in pedons where it is within a depth of 15 inches

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3
Structure—thin to thick platy; granular in some pedons
Consistence—soft or slightly hard, nonsticky or slightly sticky and nonplastic to plastic
Reaction—slightly acid to mildly alkaline
Other features—in the uppermost 1 or 2 inches, value of 6 and massive in some pedons

Bt horizon:
Hue—5YR, 7.5YR, or 10YR
Value—3 to 6 dry, 3 or 4 moist
Chroma—2, 3, or 4
Content of clay—40 to 60 percent
Texture—clay or gravelly clay
Content of rock fragments—0 to 30 percent pebbles or cobbles
Structure—moderate or strong, subangular or angular blocky or prismatic

Nomara Series

The Nomara series consists of moderately deep, well drained, moderately slowly permeable soils that formed in residuum and colluvium weathered from argillite, slate, andesite, quartzite, and limestone. Nomara soils are on side slopes of mountains. Slopes are 30 to 50

percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Calcic Pachic Argixerolls

Typical pedon: Nomara stony silt loam, 30 to 50 percent slopes, in an area of Sumine-Gosumi-Nomara association; in Humboldt County, east part:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) stony silt loam, very dark brown (10YR 2/2) moist; weak very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 5 percent pebbles, 3 percent cobbles, 1 percent stones; neutral (pH 7.0); abrupt wavy boundary. (1 to 5 inches thick)

A2—4 to 10 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 5 percent pebbles; neutral (pH 7.2); clear wavy boundary. (3 to 6 inches thick)

A3—10 to 19 inches; grayish brown (10YR 5/2) gravelly silt loam, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine interstitial pores; 10 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.4); abrupt wavy boundary. (4 to 9 inches thick)

Bt—19 to 34 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; very hard, friable, sticky and plastic; few very fine roots; few very fine interstitial and tubular pores; few thin clay films on faces of peds and lining pores; 40 percent pebbles; mildly alkaline (pH 7.6); abrupt wavy boundary. (8 to 15 inches thick)

Btk—34 to 40 inches; brown (10YR 5/3) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; common thin clay films lining pores; 60 percent pebbles, 20 percent cobbles; many medium soft masses of lime; violently effervescent; strongly alkaline (pH 8.8); abrupt irregular boundary. (3 to 10 inches thick)

2R—40 to 45 inches; light yellowish brown (10YR 6/4), fractured bedrock, dark yellowish brown (10YR 4/4) moist; lime coatings on rock fragments and in cracks.

Type location: Humboldt County, Nevada; approximately 4 miles southeast of Winnemucca, about 1,600 feet north and 2,400 feet east of the southwest corner of sec. 12, T. 35 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from July through September

Soil temperature: 40 to 47 degrees F

Mollic epipedon: 20 to 36 inches thick

Depth to bedrock: 20 to 40 inches

Depth to carbonates: 17 to 36 inches

Bt horizon:

Value—4 or 5 dry, 2, 3, or 4 moist

Texture—very gravelly silt loam, very gravelly loam, or extremely gravelly clay loam

Content of clay—20 to 35 percent

Content of rock fragments—40 to 80 percent

Consistence—hard or very hard

Reaction—mildly alkaline in the upper part, moderately alkaline or strongly alkaline in the lower part

Orovada Series

The Orovada series consists of very deep, well drained, moderately permeable soils that formed in loess over alluvium derived from mixed rock sources. Orovada soils are on fan skirts, fan aprons, and inset fans. Slopes are 0 to 8 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Durixerollic Camborthids

Typical pedon: Orovada very fine sandy loam, 2 to 8 percent slopes, in an area of Misad-Orovada-Snapp association where pebbles cover approximately 10 percent of the surface:

A1—0 to 2 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; many fine vesicular pores; 1 percent pebbles; mildly alkaline (pH 7.6); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 6 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and slightly plastic; common very fine roots; many fine vesicular pores; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 6 inches thick)

Bw—6 to 11 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine to medium and few coarse roots; common very fine tubular

pores; mildly alkaline (pH 7.8); clear smooth boundary. (4 to 20 inches thick)

Bqk—11 to 15 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine roots; few fine tubular pores; 30 percent hard, firm, 10- to 20-millimeter durinodes; common fine irregular lime filaments; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (3 to 7 inches thick)

Bq1—15 to 29 inches; very pale brown (10YR 7/3) very fine sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, nonsticky and nonplastic; many very fine roots; common very fine tubular pores; 60 percent hard, firm, 10- to 20-millimeter durinodes; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (10 to 20 inches thick)

Bq2—29 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine roots; common very fine tubular pores; 20 percent hard, firm, 15- to 25-millimeter durinodes; violently effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; approximately 24 miles southeast of Winnemucca, in Pumpernickel Valley, about 100 feet east and 500 feet south of the northwest corner of sec. 17, T. 32 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to the Bq or Bqk horizon: 10 to 28 inches
Control section: Texture—stratified fine sandy loam, very fine sandy loam, loam, or silt loam that has strata of loamy fine sand or sandy loam in some pedons; content of clay—5 to 18 percent; content of rock fragments—0 to 15 percent, mainly pebbles
Other features: Value of more than 5.5 dry and 3.5 moist when the uppermost 7 inches is mixed

A horizon:
Hue—10YR or 2.5Y
Value—5, 6, or 7 dry, 3 or 4 moist
Chroma—2 to 4
Structure—platy, prismatic, or granular
Consistence—soft or slightly hard
Reaction—neutral to moderately alkaline

Bw horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 to 6
Texture—fine sandy loam, very fine sandy loam, loam, or silt loam
Content of clay—5 to 18 percent
Content of rock fragments—average of 0 to 15 percent pebbles
Structure—subangular blocky or prismatic
Reaction—mildly alkaline or moderately alkaline

Bq or Bqk horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 3, 4, or 5 moist
Chroma—2 to 6
Content of rock fragments—as much as 30 percent pebbles in some subhorizons in some pedons
Consistence—soft to hard, very friable or friable
Reaction—moderately alkaline to very strongly alkaline, becoming more alkaline with depth
Cementation—contains 20 to 80 percent durinodes
Other features—gypsum crystals below a depth of 37 inches in some pedons; a duripan or very gravelly strata below a depth of 40 inches in some pedons

Oxcorel Series

The Oxcorel series consists of very deep, well drained, very slowly permeable soils that formed in alluvium derived from mixed rock sources and somewhat influenced by loess. Oxcorel soils are on fan piedmonts and fan piedmont remnants. Slopes are 2 to 8 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Duric Natrargids

Typical pedon: Oxcorel gravelly very fine sandy loam, 2 to 8 percent slopes, in an area of Snapp-Oxcorel association where pebbles cover approximately 22 percent and cobbles 2 percent of the surface:

A1—0 to 2 inches; light gray (10YR 7/2) gravelly very fine sandy loam, brown (10YR 5/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine and medium vesicular pores; 15 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 6 inches thick)

A2—2 to 8 inches; light gray (10YR 7/2) gravelly very fine sandy loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; few very fine and fine tubular pores; 15 percent pebbles; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 6 inches thick)

Btn1—8 to 14 inches; light yellowish brown (10YR 6/4) clay, dark brown (10YR 4/3) moist; strong fine and medium prismatic structure; very hard, very firm, sticky and very plastic; common very fine and few fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (4 to 19 inches thick)

Btn2—14 to 18 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium angular blocky structure; hard, firm, sticky and very plastic; common very fine and few fine roots; common very fine and few fine tubular pores; many moderately thick clay films on faces of peds and lining pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 13 inches thick)

Btn3—18 to 24 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; common very fine and few fine tubular pores; many moderately thick clay films on faces of peds and lining pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 12 inches thick)

Btnqk—24 to 34 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; 15 percent pebbles; 25 percent strongly cemented durinodes; many fine and medium lime seams; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (4 to 19 inches thick)

Bqk—34 to 60 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine roots; few very fine and fine tubular pores; 35 percent pebbles, 5 percent cobbles; 20 percent strongly cemented durinodes; common fine lime seams; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Pershing County, Nevada; approximately 28 miles south of Winnemucca, about 2,500 feet east and 2,200 feet north of the southwest corner of sec. 23, T. 31 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and early spring

Soil temperature: 47 to 52 degrees F

Depth to the base of the natric horizon: 20 to 40 inches

Depth to durinodes: 20 to 34 inches

Control section: Texture—clay or clay loam; content of clay—35 to 50 percent; content of rock fragments—0 to 10 percent pebbles in the upper part, 10 to 20 percent pebbles in the lower part

Other features: An E horizon ½ inch to 2 inches thick capping the Bt horizon in some pedons

A horizon:
- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2 or 3

Bt horizon:
- Hue—7.5YR or 10YR
- Value—5, 6, or 7 dry, 4, 5, or 6 moist
- Chroma—3 to 6 (3 only in the upper part of the horizon)
- Reaction—moderately alkaline to very strongly alkaline
- Carbonates—a noneffervescent to strongly effervescent matrix in the upper part; segregated lime commonly in the lower part
- Cementation—10 to 30 percent durinodes commonly in the lower subhorizon
- Other features—gypsum in the lower part of the horizon in some pedons

Bqk horizon:
- Value—5, 6, or 7 dry, 4, 5, or 6 moist
- Chroma—3 to 6
- Content of rock fragments—35 to 60 percent
- Texture—very gravelly sandy loam or very gravelly loam
- Cementation—20 to 60 percent weakly or strongly cemented durinodes and as much as 30 percent weak, discontinuous cementation
- Other features—less than 20 percent durinodes in the upper part in some pedons

Oxcorel Variant

The Oxcorel Variant consists of deep, well drained, very slowly permeable soils that formed in residuum and colluvium weathered from basalt, quartzite, chert, and argillite with an admixture of loess high in content of volcanic ash. Oxcorel Variant soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Duric Natrargids

Typical pedon: Oxcorel Variant cobbly loam, 30 to 50 percent slopes, in an area of Trunk-Oxcorel Variant-Bojo association where pebbles cover approximately 15 percent, cobbles 15 percent, and stones 5 percent of the surface:

A1—0 to 1 inch; light gray (10YR 7/2) cobbly loam, pale brown (10YR 6/3) moist; weak very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 5 percent pebbles, 15 percent cobbles; strongly alkaline (pH 8.6); clear smooth boundary. (1 to 4 inches thick)

A2—1 to 4 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 5 inches thick)

Btnk1—4 to 11 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; very hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; many thin clay films on faces of peds and lining pores; common fine soft masses of lime; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (5 to 10 inches thick)

Btnk2—11 to 18 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure; hard, firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; few thin clay films on faces of peds and lining pores; few fine soft masses of lime; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (5 to 11 inches thick)

Bqk1—18 to 32 inches; white (10YR 8/2) gravelly clay loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; 15 percent pebbles; 20 percent strongly cemented durinodes; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (10 to 20 inches thick)

Bqk2—32 to 55 inches; white (10YR 8/2) clay loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; 10 percent pebbles; 25 percent strongly cemented durinodes; violently effervescent; moderately alkaline (pH 8.0). (12 to 30 inches thick)

R—55 inches; basalt.

Type location: Pershing County, Nevada; in the East Range, near Pleasant Valley, about 1,250 feet west and 2,500 feet north of the southeast corner of sec. 9, T. 29 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and early spring

Soil temperature: 47 to 52 degrees F

Depth to bedrock: 40 to 60 inches

Depth to the Bqk horizon: 18 to 29 inches

Control section: Content of clay—35 to 50 percent; texture—clay or clay loam

Content of durinodes in the Bqk horizon: 20 to 40 percent

Parran Series

The Parran series consists of very deep, somewhat poorly drained, very slowly permeable soils that formed in clayey lacustrine material derived from mixed rock sources. Parran soils are on lake plain terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Typic Salorthids

Typical pedon: Parran silty clay, 0 to 2 percent slopes, in an area of Isolde-Parran-Appian association where pebbles cover about 1 percent of the surface:

A1—0 to 2 inches; light gray (2.5Y 7/2) silty clay, dark grayish brown (2.5Y 4/2) moist; moderate thin platy structure; hard, firm, very sticky and very plastic; few very fine roots; many very fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 7 inches; light brownish gray (2.5Y 6/2) silty clay, dark grayish brown (2.5Y 4/2) moist; moderate very fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (3 to 8 inches thick)

Bz—7 to 13 inches; light brownish gray (2.5Y 6/2) silty clay, grayish brown (2.5Y 5/2) moist; weak very thin platy structure; soft, very friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; common fine salt crystals; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (5 to 15 inches thick)

Bzy—13 to 26 inches; light brownish gray (2.5Y 6/2) silty clay, grayish brown (2.5YR 5/2) moist; few fine distinct mottles; massive; slightly hard, very friable, sticky and plastic; few very fine roots; common very fine tubular pores; strongly effervescent; common fine salt and gypsum crystals; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 15 inches thick)

C—26 to 60 inches; light brownish gray (2.5Y 6/2) silty clay, dark gray (5YR 4/1) moist; common medium distinct mottles; massive; very hard, firm, very sticky

and very plastic; few very fine pores; violently effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; in the Carson Sink, about 500 feet east and 900 feet north of the southwest corner of sec. 21, T. 25 N., R. 33 E.

Range in Characteristics

Soil moisture: Saturated within a depth of 40 inches by the water table or a capillary fringe in most years
Soil temperature: 53 to 57 degrees F
Salic horizon: Thickness—12 to 28 inches; salt content—2 to 6 percent salt more soluble in cold water than gypsum; gypsum—small or moderate amounts in at least some horizons in most pedons
Depth to mottles: 10 to 30 inches
Control section: Content of clay—35 to 55 percent; texture—clay, silty clay, or silty clay loam
Reaction throughout the profile: Strongly alkaline or very strongly alkaline

A horizon:
Hue—10YR, 2.5Y, or 5Y
Value—4 or 5 moist, 6, 7, or 8 dry
Chroma—1 to 4
Structure—granular or subangular blocky

Bzy horizon:
Hue—2.5Y or 5Y
Value—4 or 5 moist, 6, 7, or 8 dry
Chroma—1, 2, 3, or 4

C horizon:
Hue—2.5Y or 5Y
Value—4 or 5 moist, 6, 7, or 8 dry
Chroma—1, 2, 3, or 4
Structure—angular or subangular blocky or platy; massive in some pedons
Mottles—common or many, fine to large, and faint to prominent
Other features—thin, discontinuous tufa deposits below a depth of 12 inches in some pedons; ostracods in some pedons

Pirouette Series

The Pirouette series consists of shallow, well drained, moderately permeable soils that formed in residuum and colluvium weathered from tuff and basalt. Pirouette soils are on summits of plateaus. Slopes are 4 to 15 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Typic Nadurargids

Typical pedon: Pirouette very stony very fine sandy loam, 4 to 15 percent slopes, in an area of Pirouette-Rezave-Rubble land association where pebbles cover about 25 percent, cobbles 10 percent, and stones 10 percent of the surface:

A1—0 to 2 inches; very pale brown (10YR 7/3) very stony very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine and medium vesicular pores; 15 percent pebbles, 10 percent stones; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 4 inches; pale brown (10YR 6/3) very stony very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent pebbles, 5 percent cobbles, 10 percent stones; slightly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 5 inches thick)

Btn—4 to 9 inches; brown (7.5YR 5/4) very cobbly clay loam, brown (7.5YR 4/4) moist; moderate medium prismatic structure; hard, firm, sticky and plastic; common very fine and few fine roots; common very fine and fine tubular pores; 25 percent pebbles, 20 percent cobbles; many thin clay films lining pores and on faces of peds; slightly effervescent; strongly alkaline (pH 9.0); gradual smooth boundary. (3 to 6 inches thick)

Btnk—9 to 14 inches; light brown (7.5YR 6/4) very cobbly clay loam, brown (7.5YR 4/4) moist; weak fine prismatic structure; hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; 25 percent pebbles, 20 percent cobbles; many thin clay films lining pores and on faces of peds; few medium filaments of lime; strongly effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (3 to 6 inches thick)

Bqkm—14 to 16 inches; white (10YR 8/2), indurated duripan, pale brown (10YR 6/3) moist; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 9.0); abrupt smooth boundary. (1 to 3 inches thick)

2R—16 inches; basalt.

Type location: Pershing County, Nevada; in the Sou Hills, along the northern part of Dixie Valley, about 1,000 feet east and 500 feet south of the northwest corner of sec. 6, T. 26 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 52 to 56 degrees F
Combined thickness of the A and Bt horizons: 8 to 14 inches

Depth to a duripan: 11 to 20 inches
Depth to bedrock: 12 to 23 inches
Reaction throughout the profile: Moderately alkaline to very strongly alkaline

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Btn horizon:
Hue—7.5YR or 5YR
Value—5 or 6 dry, 4 to 6 moist
Chroma—3 or 4
Texture—very cobbly clay loam, very cobbly silty clay loam, or very cobbly loam
Content of clay—25 to 35 percent
Content of rock fragments—35 to 50 percent
Structure—dominantly weak or moderate, medium or fine prismatic but subangular blocky in the Btn3 horizon in some pedons
Thickness—6 to 10 inches

Bqk horizon:
Does not occur in some pedons where the duripan is within a depth of 14 inches

Pocan Series

The Pocan series consists of deep, well drained, moderately permeable soils that formed in colluvium and residuum weathered from quartzite, slate, shale, sandstone, chert, and limestone. Pocan soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Camborthids

Typical pedon: Pocan stony loam, 30 to 50 percent slopes, in an area of Trunk-Pocan association:

A1—0 to 3 inches; pale brown (10YR 6/3) stony loam, dark brown (10YR 3/3) moist; weak fine and moderate very fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine fibrous roots; many very fine interstitial pores; 1 percent stones; neutral (pH 7.2); clear smooth boundary. (2 to 6 inches thick)

A2—3 to 10 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few fine and common very fine roots; many very fine interstitial pores; mildly alkaline (pH 7.4); clear smooth boundary. (5 to 11 inches thick)

Bw—10 to 26 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 4/3) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular and interstitial pores; 15 percent fine pebbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (13 to 21 inches thick)

Bk—26 to 48 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common very fine tubular and interstitial pores; 20 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary. (20 to 25 inches thick)

2R—48 inches; quartzite.

Type location: Pershing County, Nevada; about 25 miles southeast of Winnemucca, in the southern part of the Sonoma Range, about 1,000 feet south and 1,000 feet east of the northwest corner of sec. 28, T. 32 N., R. 39.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to carbonates: 20 to 38 inches
Depth to bedrock: 40 to 60 inches
Control section: Content of clay—18 to 25 percent; texture—dominantly loam or gravelly loam that has thin strata of clay loam in some pedons
Content of rock fragments—5 to 35 percent

A horizon:
Reaction—neutral or mildly alkaline

Bw horizon:
Content of rock fragments—5 to 35 percent
Reaction—neutral or mildly alkaline
Other features—slightly effervescent in the lowermost 2 or 3 inches of the horizon in some pedons

Bk horizon:
Content of rock fragments—15 to 35 percent
Reaction—moderately alkaline or strongly alkaline

Pocker Series

The Pocker series consists of very deep, moderately well drained, slowly permeable soils that formed in clayey alluvium derived from mixed rock sources. Pocker soils are on stream terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Typic Torrifluvents

Typical pedon: Pocker silty clay loam:

A1—0 to 3 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, friable, sticky and plastic; few medium and very fine roots; common very fine and few fine vesicular pores; few fine and very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (1 to 4 inches thick)

A2—3 to 6 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; slightly hard, friable, sticky and plastic; common very fine to medium roots; few very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (2 to 4 inches thick)

C1—6 to 10 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine to medium roots; few very fine and fine tubular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary. (2 to 6 inches thick)

C2—10 to 27 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; moderate very coarse prismatic structure; hard, friable, very sticky and very plastic; many very fine to medium exped roots; few very fine, fine, and medium tubular pores; violently effervescent; very strongly alkaline (pH 9.2); abrupt wavy boundary. (12 to 25 inches thick)

C3—27 to 32 inches; light gray (10YR 7/2) silty clay, brown (10YR 4/3) moist; massive; hard, friable, very sticky and very plastic; few medium and very fine roots; few very fine, fine, and medium pores; violently effervescent; very strongly alkaline (pH 9.2); clear wavy boundary. (3 to 11 inches thick)

Ck—32 to 60 inches; light gray (10YR 7/2) silty clay, pale brown (10YR 6/3) moist; massive; very hard, friable, very sticky and very plastic; few medium and very fine roots; few very fine, fine, and medium pores; violently effervescent; many fine lime nodules; very strongly alkaline (pH 9.2).

Type location: Pershing County, Nevada; about 19 miles south of Winnemucca, in Grass Valley, about 1,320 feet south of the northwest corner of sec. 30, T. 33 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 47 to 53 degrees F

Depth to the Ck horizon: 32 to 50 inches

Control section: Content of clay—35 to 50 percent; texture—clay, silty clay, or silty clay loam that has thin strata of silt loam or loam in many pedons

Reaction throughout the profile: Strongly alkaline or very strongly alkaline

Salt and sodium: Moderately or strongly saline-sodic affected to a depth of 40 inches

A horizon:
- Hue—10YR or 2.5Y
- Structure—weak to strong, very thin to medium, platy
- Consistence—slightly hard or hard
- Other features—a buried A horizon below a depth of 10 inches in many pedons

C horizon:
- Hue—10YR or 2.5Y
- Value—6, 7, or 8 dry, 4, 5, or 6 moist
- Chroma—2 or 3
- Other features—few to many very hard or extremely hard, fine to large lime nodules in the Ck horizon

Pocker Variant

The Pocker Variant consists of very deep, moderately permeable soils that formed in alluvium derived from mixed rock sources. Drainage has been altered by the release of irrigation water by Rye Patch Reservoir, causing an annual water table that is higher than is typical in these soils. Pocker Variant soils are on flood plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Coarse-silty, mixed (calcareous), mesic Aquic Xerofluvents

Typical pedon: Pocker Variant loam, wet:

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine roots; common very fine and fine interstitial pores; violently effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 6 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 8 inches thick)

C—6 to 17 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many

very fine, common fine, and few medium roots; common very fine tubular pores; violently effervescent; moderately alkaline (pH 8.6); clear smooth boundary. (9 to 14 inches thick)

Cky—17 to 45 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; few fine gypsum masses; violently effervescent; common fine soft masses of lime; moderately alkaline (pH 8.2); clear smooth boundary. (22 to 35 inches thick)

C'—45 to 60 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; few fine distinct light reddish brown (5YR 6/4) iron mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Pershing County, Nevada; about 0.2 mile south of Rye Patch Reservoir, about 1,400 feet south and 200 feet west of the northeast corner of sec. 19, T. 30 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 48 to 50 degrees F
Depth to iron mottles: 40 to 50 inches
Control section: Content of clay—10 to 18 percent; content of rock fragments—0 to 5 percent; effervescence—strongly effervescent or violently effervescent
Calcium carbonate equivalent: 2 to 10 percent
Other features: No Cky horizon in some pedons
C horizon:
Texture—averages silt loam but includes thin strata of loam, or very fine sandy loam in some pedons

Polum Series

The Polum series consists of very deep, well drained, moderately permeable soils that formed in residuum and colluvium derived from limestone, dolomite, and calcareous shale. Polum soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed Calcic Pachic Cryoborolls

Typical pedon: Polum gravelly silt loam, 30 to 50 percent slopes, in an area of Polum-Dekoom-Polum Variant association:

A1—0 to 1 inch; dark grayish brown (10YR 4/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; 25 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 7 inches thick)

A2—1 to 7 inches; dark grayish brown (10YR 4/2) gravelly silt 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 few fine and medium roots; few very fine tubular pores; 25 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (4 to 10 inches thick)

A3—7 to 17 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 40 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (0 to 10 inches thick)

Bk1—17 to 24 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine tubular pores; 40 percent pebbles; violently effervescent; common fine and medium lime filaments; thin lime coatings on pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (7 to 18 inches thick)

Bk2—24 to 60 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine tubular pores; 55 percent pebbles; strongly effervescent; common fine lime filaments; thin lime coatings on pebbles; moderately alkaline (pH 8.2).

Type location: Pershing County, Nevada; near Star Peak, about 10 miles south of Imlay, about 100 feet north and 1,700 feet west of the southeast corner of sec. 29, T. 31 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist from late fall through early summer, dry from late July through September
Soil temperature: 41 to 45 degrees F
Average soil temperature in summer: 54 to 59 degrees F

Mollic epipedon: 16 to 30 inches thick; includes the upper part of the Bk horizon in some pedons
Depth to bedrock: More than 60 inches
Control section: Content of clay—12 to 18 percent; content of rock fragments—40 to 60 percent, mainly pebbles
Calcium carbonate equivalent: 15 to 35 percent

A horizon:
Value—4 or 5 dry
Chroma—2 or 3

Bk horizon:
Value—5 or 6 dry, 3 or 4 moist (the darker value in the upper part of the horizon)
Chroma—2 to 4
Texture—very gravelly loam or very gravelly silt loam

Polum Variant

The Polum Variant consists of moderately deep, well drained, moderately permeable soils that formed in residuum weathered from limestone, dolomite, and calcareous shale. Polum Variant soils are on crests of mountains. Slopes are 4 to 15 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 41 degrees F.

Taxonomic class: Loamy-skeletal, mixed Calcic Cryoborolls

Typical pedon: Polum Variant extremely gravelly loam, 4 to 15 percent slopes, in an area of Polum-Dekoom-Polum Variant association where pebbles cover about 80 percent, cobbles 5 percent, and stones 3 percent of the surface:

A1—0 to 2 inches; grayish brown (10YR 5/2) extremely gravelly loam, very dark gray (10YR 3/1) moist; weak thin platy structure; soft, very friable, nonsticky and slightly plastic; few very fine roots; many very fine tubular pores; 65 percent pebbles; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 5 inches thick)

A2—2 to 10 inches; brown (10YR 5/3) very gravelly silt loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; 40 percent pebbles; strongly effervescent; thin lime coatings on the underside of pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 9 inches thick)

Bk—10 to 23 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 40 percent pebbles, 5 percent cobbles; strongly effervescent; thin lime coatings on all sides of rock fragments; moderately alkaline (pH 8.4); abrupt smooth boundary. (12 to 20 inches thick)

R—23 inches; limestone.

Type location: Pershing County, Nevada; near Star Peak, about 10 miles south of Imlay, about 2,200 feet north and 350 feet east of the southwest corner of sec. 28, T. 31 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist from late fall through early summer, dry from late July through September
Soil temperature: 41 to 45 degrees F
Average soil temperature in summer: 54 to 59 degrees F
Mollic epipedon: 7 to 12 inches thick
Depth to bedrock: 20 to 30 inches
Control section: Texture—loam or silt loam; content of rock fragments—35 to 60 percent, mostly pebbles; calcium carbonate equivalent—20 to 35 percent; reaction—moderately alkaline or strongly alkaline, becoming more alkaline with depth

Preble Series

The Preble series consists of very deep, somewhat poorly drained, slowly permeable soils that formed in alluvium derived from mixed rock sources and in lake sediments somewhat influenced by pyroclastic material. Preble soils are on alluvial flats. Slopes are 0 to 2 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Aquic Durorthidic Torriorthents

Typical pedon: Preble silt loam, strongly saline-sodic:

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 5 inches thick)

C1—4 to 8 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 6 inches thick)

C2—8 to 14 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very

fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (3 to 8 inches thick)

Cq1—14 to 22 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine, fine, and medium roots; few very fine tubular pores; 25 percent hard, firm durinodes; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 10 inches thick)

Cq2—22 to 34 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine and fine roots; common very fine tubular pores; weak silica cementation; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (10 to 16 inches thick)

Cq3—34 to 42 inches; very pale brown (10YR 7/3) fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 25 percent hard, firm durinodes; violently effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (7 to 16 inches thick)

C′—42 to 60 inches; light gray (10YR 7/2) sandy clay loam, pale brown (10YR 6/3) moist; few fine distinct dark brown (7.5YR 4/4) mottles; massive; slightly hard, friable, sticky and plastic; violently effervescent; moderately alkaline (pH 8.0).

Type location: Pershing County, Nevada; about 14 miles south of Winnemucca, in Grass Valley, about 100 feet south and 300 feet east of the northwest corner of sec. 11, T. 33 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from July through October

Soil temperature: 47 to 52 degrees F

Depth to a weakly cemented horizon: 8 to 14 inches

Control section: Content of clay—8 to 15 percent; texture—very fine sandy loam or fine sandy loam

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Reaction—moderately alkaline or strongly alkaline

C horizon:
- Hue—10YR, 2.5Y, or 5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Reaction—moderately alkaline to very strongly alkaline
- Cementation—weakly silica-cemented in the upper part of the Cq horizon; 20 to 75 percent durinodes in subhorizons
- Other features—a substratum of sandy clay loam below a depth of 40 inches in some pedons

Preble Variant

The Preble Variant consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in alluvium derived from mixed sources and somewhat influenced by loess high in content of volcanic ash. Preble Variant soils are in seep areas along a fault line on fan aprons. Slopes are 2 to 8 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed (calcareous), mesic Aquic Durorthidic Torriorthents

Typical pedon: Preble Variant very fine sandy loam, 2 to 8 percent slopes, in an area of Preble Variant-Whirlo association where pebbles cover about 7 percent of the surface:

A—0 to 5 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; strong medium and thick platy structure parting to moderate very thin platy; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and common fine vesicular and few very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (3 to 7 inches thick)

C1—5 to 12 inches; very pale brown (10YR 7/3) sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine and few fine tubular pores; 5 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (5 to 12 inches thick)

C2—12 to 17 inches; very pale brown (10YR 7/3) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine, few fine, and few medium roots; many very fine tubular pores; 3 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (3 to 20 inches thick)

Cq1—17 to 28 inches; light gray (10YR 7/2) sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine

tubular pores; 2 percent pebbles; 10 percent durinodes; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (9 to 15 inches thick)

Cq2—28 to 33 inches; very pale brown (10YR 7/3) sandy clay loam, brown (10YR 4/3) moist; massive; hard, firm, sticky and slightly plastic; few very fine and fine roots; many very fine, common fine, and few medium tubular pores; 10 percent pebbles; 40 percent 5- to 10-millimeter durinodes; weak, continuous silica cementation; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (3 to 7 inches thick)

Cqk1—33 to 39 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine and medium tubular pores; 15 percent pebbles; few fine lime filaments; weak, continuous silica cementation; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (4 to 8 inches thick)

Cqk2—39 to 47 inches; brownish yellow (10YR 6/6) sandy clay loam, dark yellowish brown (10YR 4/4) moist; few fine reddish yellow (7.5YR 6/6) mottles; massive; hard, firm, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 10 percent pebbles; 20 percent strongly cemented durinodes; few fine lime filaments; weak, continuous silica cementation; slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (7 to 11 inches thick)

Cqk3—47 to 60 inches; very pale brown (10YR 7/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; many large reddish yellow (7.5YR 6/6) mottles and many large black (10YR 2/1) manganese stains; massive; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; 20 percent pebbles, 2 percent cobbles; few fine lime filaments; weak, continuous silica cementation; slightly effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; in Jersey Valley, about 1,600 feet south and 2,500 feet west of the northeast corner of sec. 29, T. 27 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from July through October

Soil temperature: 47 to 52 degrees F

Control section: Texture—sandy loam or sandy clay loam that has 5 to 20 percent pebbles; cementation—weak, continuous silica cementation in some part of the control section

Reaction throughout the profile: Strongly alkaline or very strongly alkaline

Salinity: Nonsaline in the upper part of the profile to moderately saline in the lower part

Puffer Series

The Puffer series consists of shallow, well drained, moderately rapidly permeable soils that formed in residuum weathered from limestone. Puffer soils are on side slopes of mountains and foothills. Slopes are 4 to 75 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Lithic Xeric Torriorthents

Typical pedon: Puffer very cobbly loam, 30 to 50 percent slopes, in an area of Findout-Puffer-Rock outcrop association where pebbles cover about 25 percent, cobbles 30 percent, and stones 5 percent of the surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 25 percent pebbles, 30 percent cobbles, 5 percent stones; strongly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 4 inches; light brownish gray (10YR 6/2) gravelly very fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine tubular pores; 25 percent pebbles, 5 percent stones; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 3 inches thick)

Bk—4 to 11 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; common very fine tubular pores; 40 percent pebbles, 5 percent cobbles, 5 percent stones; very thin lime coatings on all sides of rock fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (2 to 10 inches thick)

R—11 inches; limestone; weathered in the uppermost 1 inch in places.

Type location: Pershing County, Nevada; in the Augusta Mountains, about 750 feet west and 500 feet north of the southeast corner of sec. 15, T. 25 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to bedrock: 4 to 14 inches
Control section: Content of clay—10 to 18 percent; content of rock fragments—45 to 75 percent, including pebbles and channery fragments (30 to 60 percent) and flagstones and cobbles (10 to 25 percent)
Reaction throughout the profile: Mildly alkaline or moderately alkaline
Calcium carbonate equivalent: 5 to 15 percent
Effervescence: Strongly effervescent or violently effervescent

A horizon:
- Value—4 to 6 dry, 2 to 4 moist (dark colors related mainly to the parent material)
- Chroma—1 to 3
- Structure—subangular blocky or platy

B horizon:
- Hue—10YR or 7.5YR
- Value—4 to 6 dry, 2 to 4 moist (dark colors related mainly to the parent material)
- Chroma—2 to 4
- Texture (the fraction less than 2 millimeters in size)—fine sandy loam, loam, or sandy loam
- Content of rock fragments—35 to 70 percent, dominated by pebbles and channery fragments
- Structure—subangular blocky; massive in some pedons

Pumper Series

The Pumper series consists of very deep, somewhat excessively drained, moderately permeable soils that formed in loess high in content of volcanic ash over alluvium derived from mixed rock sources. Pumper soils are on fan skirts. Slopes are 0 to 2 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Sandy-skeletal, mixed, mesic Typic Camborthids

Typical pedon: Pumper loam:

A—0 to 3 inches; very pale brown (10YR 7/3) loam, grayish brown (10YR 5/2) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many medium and fine vesicular pores; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 6 inches thick)

Bw—3 to 12 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; many fine roots; many very fine interstitial pores; strongly alkaline (pH 9.0); clear smooth boundary. (6 to 19 inches thick)

2Bk1—12 to 17 inches; light brownish gray (10YR 6/2) extremely gravelly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 65 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (0 to 19 inches thick)

3Bk2—17 to 23 inches; pale brown (10YR 6/3) very gravelly sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine interstitial pores; 55 percent pebbles; many lime coatings on the underside of pebbles; violently effervescent; strongly alkaline (pH 8.6); clear wavy boundary. (0 to 9 inches thick)

3C—23 to 60 inches; light brownish gray (10YR 6/2) extremely gravelly sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and fine and few medium interstitial pores; 70 percent pebbles; violently effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; about 20 miles south of Winnemucca, about 500 feet south and 500 feet east of the west quarter corner of sec. 21, T. 33 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 53 degrees F
Control section: Content of clay—0 to 10 percent; texture—averages very gravelly sand or extremely gravelly sand; content of rock fragments—50 to 80 percent, mainly pebbles
Depth to the 2Bk horizon: 11 to 24 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—weak or moderate, thin to thick platy; massive in some pedons
- Consistence—soft or slightly hard
- Reaction—mildly alkaline to strongly alkaline
- Other features—because of recharge from dust, slightly effervescent in some pedons

Bw horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 or 4 moist (5 dry and 3 moist because of dark colored sand grains)
Chroma—2 or 3
Texture—commonly loam but includes very fine sandy loam, silt loam, fine sandy loam, and sandy loam
Structure—weak medium or coarse subangular blocky or prismatic
Reaction—mildly alkaline to strongly alkaline

2Bk1, 3Bk2, and 3C horizons:
Hue—10YR or 2.5Y
Value—4 to 8 dry, 3 to 6 moist
Chroma—1 to 3
Texture—stratified very gravelly sand to extremely gravelly coarse sand
Reaction—moderately alkaline or strongly alkaline
Carbonates—very thin coatings on at least the underside of rock fragments; few or common soft lime masses in some pedons

Raglan Series

The Raglan series consists of very deep, well drained, moderately slowly permeable soils that formed in alluvium derived from mixed rock sources. Raglan soils are on alluvial flat remnants. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Duric Camborthids

Typical pedon: Raglan silt loam, moderately saline-sodic:

A1—0 to 4 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many very fine and few medium vesicular pores; slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 5 inches thick)

A2—4 to 7 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine and fine roots; common fine vesicular pores; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 5 inches thick)

Bw—7 to 13 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine and medium roots; few very fine tubular pores; slightly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (5 to 12 inches thick)

Bqk1—13 to 21 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 20 percent durinodes; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (7 to 10 inches thick)

Bqk2—21 to 26 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and slightly plastic; common very fine roots; few very fine tubular pores; 60 percent durinodes; violently effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (5 to 12 inches thick)

2Bk—26 to 35 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; few fine distinct dark brown (7.5YR 4/4) relict mottles; massive; hard, friable, nonsticky and plastic; few very fine roots; common very fine tubular pores; few fine lime seams; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (7 to 12 inches thick)

3C—35 to 60 inches; light gray (2.5Y 7/2) very fine sandy loam, grayish brown (2.5Y 5/2) moist; common medium distinct dark brown (7.5YR 4/4) relict mottles; massive; soft, very friable, nonsticky and nonplastic; common very fine interstitial pores; 5 percent pebbles; slightly effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; about 16 miles south of Winnemucca, in Grass Valley, about 700 feet east and 1,400 feet north of the southwest corner of sec. 16, T. 33 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; intermittently moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to the Bqk horizon: 10 to 20 inches
Control section: Content of clay—18 to 25 percent; texture—loam, silt loam, very fine sandy loam, clay loam, or silty clay loam (averages silt loam having more than 15 percent sand coarser than very fine sand)
Color throughout the profile: Hue of 10YR or 2.5Y; value of 6 or 7 dry, 4 or 5 moist; and chroma of 2 to 4
Reaction throughout the profile: Mildly alkaline to very strongly alkaline, generally becoming more alkaline with depth

Salt and sodium: Generally not affected or slightly saline-sodic affected to a depth of 10 to 20 inches and slightly to strongly saline-sodic affected in the lower part of the profile; moderately or strongly saline-sodic affected phases in some areas
Other features: Mixed mineralogy that is strongly influenced by volcanic ash

A horizon:
Structure—weak to strong, thin to thick platy; granular or massive in some pedons
Consistence—soft or slightly hard
Effervescence—noneffervescent to strongly effervescent

Bw horizon:
Structure—fine to coarse, platy, prismatic, or subangular blocky
Effervescence—noneffervescent to strongly effervescent

Bqk1 and Bqk2 horizons:
Durinodes—20 to 80 percent; as much as 40 percent weak, discontinuous silica cementation commonly in any subhorizon having durinodes; hard or very hard, firm or very firm, brittle durinodes
Consistence—soft to hard, very friable or friable in the matrix

2Bk and 3C horizons:
Hue—2.5Y or 5Y
Structure—platy; massive in some pedons
Effervescence—strongly effervescent or violently effervescent
Other features—lacustrine material with hue of 2.5Y or 5Y and relict mottles with iron stains that have reddish hue (7.5YR or 5YR) and high chroma (4 to 6) below a depth of 24 inches in some pedons; unrelated very hard, basaltic dikes below a depth of 36 inches in a few pedons

Ragtown Series

The Ragtown series consists of very deep, moderately well drained, slowly permeable soils that formed in moderately fine textured and fine textured lacustrine material derived from mixed rock sources. Ragtown soils are on lake plain terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Typic Torriorthents

Typical pedon: Ragtown fine sandy loam, 0 to 2 percent slopes, in an area of Slaw-Ragtown association:

A—0 to 7 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine vesicular pores; slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (5 to 10 inches thick)

C1—7 to 13 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (3 to 8 inches thick)

C2—13 to 20 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (7 to 15 inches thick)

C3—20 to 33 inches; very pale brown (10YR 7/3) silty clay, brown (10YR 5/3) moist; massive; hard, firm, very sticky and very plastic; few very fine, fine, and medium tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (11 to 15 inches thick)

C4—33 to 43 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, very sticky and very plastic; common very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (8 to 12 inches thick)

C5—43 to 65 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, friable, sticky and plastic; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; on the west side of Dixie Valley, about 300 feet west and 800 feet north of the southeast corner of sec. 28, T. 25 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually dry; intermittently moist for short periods in winter and spring
Soil temperature: 53 to 57 degrees F
Depth to fine textured material: 16 to 30 inches
Control section: Content of clay—average of 35 to 45 percent, 25 to 35 percent in the upper part and more than 35 percent in the lower part; texture—stratified clay loam and sandy clay loam in the

upper part and stratified clay, silty clay, and silty clay loam in the lower part

Reaction throughout the profile: Moderately alkaline to very strongly alkaline (very strongly alkaline generally in strongly saline-sodic affected areas)

Effervescence: Slightly effervescent to violently effervescent

A horizon:
Hue—10YR, 2.5Y, or 5Y
Value—5, 6, or 7 dry, 3, 4, or 5 moist
Chroma—2, 3, or 4
Structure—platy or subangular blocky

C horizon:
Hue—10YR, 2.5Y, or 5Y
Value—6 or 7 dry, 4, 5, or 6 moist
Chroma—2 or 3
Structure—platy, subangular blocky, or prismatic; massive in some pedons
Secondary carbonates—common in any subhorizon
Relict mottles—typically in any subhorizon but not diagnostic for the series
Other features—a Ck horizon that has secondary carbonates in some pedons

Rebel Series

The Rebel series consists of very deep, well drained, moderately rapidly permeable soils that formed in alluvium derived from mixed rock sources. Rebel soils are on inset fans. Slopes are 0 to 4 percent. The mean annual precipitation is about 8 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Camborthids

Typical pedon: Rebel loam, 0 to 2 percent slopes:

A1—0 to 4 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular and vesicular pores; 3 percent pebbles; slightly effervescent; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 5 inches thick)

A2—4 to 7 inches; brown (10YR 5/3) loam, dark yellowish brown (10YR 4/4) moist; moderate thin and medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 1 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 4 inches thick)

Bw1—7 to 13 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; few very fine tubular pores; 1 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (7 to 10 inches thick)

Bw2—13 to 18 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and few fine tubular pores; 2 percent pebbles; moderately alkaline (pH 8.2); gradual smooth boundary. (3 to 9 inches thick)

C—18 to 36 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; common very fine tubular pores; 2 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); gradual smooth boundary. (15 to 30 inches thick)

Ck—36 to 60 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and common fine and medium roots; common very fine tubular pores; 10 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; in Jersey Valley, about 2,200 feet east and 2,180 feet south of the northwest corner of sec. 4, T. 27 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 47 to 52 degrees F

Combined thickness of the A and Bw horizons: 15 to 24 inches

Control section: Content of clay—10 to 18 percent; content of sand—50 to 80 percent; texture—commonly fine sandy loam but sandy loam or loam in some pedons

Depth to lime: 15 to 24 inches

Other features: Common or many mica flakes in a major part of the particle-size control section

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Reaction—neutral or mildly alkaline
Other features—because of recharge from calcareous dust, slightly effervescent in some pedons

Bw horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Reaction—neutral to moderately alkaline

C horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4
Content of rock fragments—strata that have as much as 50 percent pebbles in some pedons
Effervescence—slightly effervescent to strongly effervescent
Reaction—mildly alkaline to strongly alkaline
Other features—subhorizons of coarse sandy loam in some pedons

Reluctan Series

The Reluctan series consists of moderately deep, well drained, moderately slowly permeable soils that formed in residuum and colluvium weathered from rhyolite and other extrusive rocks. Reluctan soils are on side slopes of mountains. Slopes are 15 to 50 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Fine-loamy, mixed, frigid Aridic Argixerolls

Typical pedon: Reluctan gravelly loam, 30 to 50 percent slopes, in an area of Roca-Reluctan-Sumya association:

A1—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; few very fine vesicular pores; 25 percent pebbles, 5 percent cobbles, 1 percent stones; mildly alkaline (pH 7.4); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 5 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (2 to 5 inches thick)

A3—5 to 9 inches; brown (10YR 5/3) gravelly 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; common very fine tubular pores; 15 percent pebbles; mildly alkaline (pH 7.4); gradual smooth boundary. (3 to 9 inches thick)

Bt1—9 to 16 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores; 15 percent pebbles; mildly alkaline (pH 7.6); gradual smooth boundary. (2 to 10 inches thick)

Bt2—16 to 25 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores; 15 percent pebbles; mildly alkaline (pH 7.6); abrupt smooth boundary.

2R—25 inches; andesite.

Type location: Pershing County, Nevada; in the Tobin Range, about 2,400 feet north and 1,500 feet west of the southeast corner of sec. 34, T. 28 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from July through October
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 7 to 17 inches thick; commonly includes the upper part of the argillic horizon
Thickness of the solum: 20 to 40 inches
Depth to bedrock: 20 to 40 inches

A horizon:
Value—4 or 5 dry
Chroma—2 or 3
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Texture—gravelly loam or gravelly clay loam
Content of clay—25 to 35 percent
Content of rock fragments—15 to 35 percent, mainly pebbles
Reaction—neutral or mildly alkaline, becoming more alkaline with depth

Reluctan Variant

The Reluctan Variant consists of very deep, well drained, moderately slowly permeable soils that formed in residuum and colluvium weathered from chert, argillite, shale, and other siliceous rocks. Reluctan Variant soils are on side slopes of mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 10 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Fine-loamy, mixed, frigid Xerollic Haplargids

Typical pedon: Reluctan Variant gravelly silt loam, 30 to 50 percent slopes, in an area of Roca-Reluctan Variant association, steep, where pebbles cover about 25 percent and cobbles 2 percent of the surface:

A1—0 to 3 inches; pale brown (10YR 6/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine and common fine vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.4); clear smooth boundary. (1 to 4 inches thick)

A2—3 to 6 inches; brown (10YR 5/3) gravelly silt loam, very dark brown (10YR 3/3) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine tubular pores; 15 percent pebbles; neutral (pH 7.2); clear smooth boundary. (2 to 4 inches thick)

AB—6 to 12 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 15 percent pebbles; neutral (pH 7.2); clear smooth boundary. (5 to 8 inches thick)

Bt—12 to 24 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 20 percent pebbles; few thin clay films on faces of peds and lining pores; neutral (pH 7.2); clear smooth boundary. (10 to 15 inches thick)

Btk1—24 to 34 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; common very fine tubular pores; 30 percent pebbles; few thin clay films on faces of peds and lining pores; neutral (pH 7.2); clear smooth boundary. (9 to 13 inches thick)

Btk2—34 to 46 inches; pale brown (10YR 6/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; 45 percent pebbles, 10 percent cobbles; many medium lime filaments; common thin clay films on faces of peds and lining pores; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (12 to 20 inches thick)

Btk3—40 to 60 inches; brownish yellow (10YR 6/6) very gravelly clay loam, yellowish brown (10YR 5/6) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; 35 percent pebbles, 5 percent cobbles; common fine lime filaments; many thin clay films on faces of peds and lining pores; slightly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; in the southern part of the Sonoma Range, about 300 feet north and 1,800 feet west of the southeast corner of sec. 16, T. 32 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Depth to bedrock: More than 60 inches
Argillic horizon: Content of clay—18 to 25 percent; content of rock fragments—15 to 35 percent
Reaction: Neutral or mildly alkaline in the A and Bt horizons and moderately alkaline in the Btk horizon

Rezave Series

The Rezave series consists of shallow, well drained, slowly permeable soils that formed in residuum weathered from basalt. Rezave soils are on side slopes of plateaus. Slopes are 30 to 50 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Clayey, montmorillonitic, mesic Lithic Natrargids

Typical pedon: Rezave extremely stony very fine sandy loam, 30 to 50 percent slopes, in an area of Pirouette-Rezave-Rubble land association where pebbles cover about 25 percent, cobbles 10 percent, and stones 20 percent of the surface:

A—0 to 3 inches; light brownish gray (10YR 6/2) extremely stony very fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular and few very fine tubular pores; 10 percent pebbles, 20 percent cobbles, 20 percent stones; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (1 to 6 inches thick)

Btn—3 to 8 inches; brown (10YR 5/3) stony clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 15 percent pebbles, 5 percent cobbles, 10 percent stones; many thin clay

films on faces of peds and lining pores; strongly effervescent; strongly alkaline (pH 9.0); gradual smooth boundary. (4 to 10 inches thick)

Btnk—8 to 14 inches; brown (7.5YR 5/4) stony clay, dark brown (7.5YR 4/4) moist; strong fine prismatic structure; hard, firm, very sticky and very plastic; common very fine and few fine roots; common very fine tubular pores; 15 percent pebbles, 5 percent cobbles, 10 percent stones, 10 percent pebble-sized duripan fragments; many moderately thick clay films lining pores and on faces of peds; many medium soft lime masses; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 8 inches thick)

Bqk—14 to 16 inches; very pale brown (10YR 8/3) stony clay loam, very pale brown (10YR 7/3) moist; massive; hard, firm, sticky and plastic; few very fine roots; few fine tubular pores; 5 percent pebbles, 5 percent cobbles, 10 percent stones; strong, discontinuous silica and lime cementation; violently effervescent; very strongly alkaline (pH 9.2); abrupt smooth boundary. (0 to 5 inches thick)

R—16 inches; basalt.

Type location: Pershing County, Nevada; about 12 miles east of Lovelock, in the West Humboldt Range, about 250 feet west and 400 feet south of the northeast corner of sec. 23, T. 27 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring

Soil temperature: 51 to 56 degrees F

Depth to hard bedrock: 14 to 20 inches

Other features: A thin E horizon between the A and Btn horizons in some pedons

A horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2, 3, or 4
- Reaction—neutral to moderately alkaline

Btn horizon:
- Hue—7.5YR or 10YR
- Value—4, 5, or 6 dry, 3 or 4 moist
- Chroma—3 or 4
- Texture—clay, clay loam, or stony clay
- Content of clay—35 to 55 percent
- Carbonates—slightly effervescent to violently effervescent; the underside of rock fragments commonly coated with lime
- Reaction—moderately alkaline or strongly alkaline

Bqk horizon (not in all pedons):
- Value—7 or 8 dry, 6 or 7 moist
- Chroma—1 to 4
- Cementation—weak to strong, discontinuous silica and lime cementation

Roca Series

The Roca series consists of moderately deep, well drained, very slowly permeable soils that formed in residuum and colluvium derived from rhyolite, quartzite, chert, shale, and andesite. Roca soils are on south-facing side slopes of hills and mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 10 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids

Typical pedon: Roca very cobbly loam, 30 to 50 percent slopes, in an area of Roca-Wiskan-Reluctan association where pebbles cover about 20 percent, cobbles 10 percent, and stones 2 percent of the surface:

A1—0 to 2 inches; light brownish gray (2.5Y 6/2) very cobbly loam, dark grayish brown (2.5Y 4/2) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine vesicular and common fine tubular pores; 10 percent pebbles, 35 percent cobbles; mildly alkaline (pH 7.4); abrupt wavy boundary. (1 to 4 inches thick)

A2—2 to 6 inches; light brownish gray (2.5Y 6/2) gravelly loam, dark grayish brown (2.5Y 4/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine and few fine roots; common fine interstitial and common very fine tubular pores; 25 percent pebbles, 1 percent cobbles; neutral (pH 7.2); abrupt wavy boundary. (3 to 6 inches thick)

Bt1—6 to 10 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine tubular pores; few thick clay films on faces of peds; 35 percent pebbles, 2 percent cobbles; neutral (pH 7.0); clear wavy boundary. (3 to 8 inches thick)

Bt2—10 to 21 inches; pale brown (10YR 6/3) very gravelly clay, brown (10YR 4/3) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; common very fine and few fine roots; common very fine tubular pores; common moderately thick clay films on faces of peds; 50 percent pebbles, 5 percent cobbles; mildly alkaline

(pH 7.6); clear wavy boundary. (6 to 14 inches thick)

Bt3—21 to 29 inches; light yellowish brown (10YR 6/4) very gravelly clay, brown (10YR 4/3) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds; 45 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary. (6 to 14 inches thick)

Bt4—29 to 34 inches; light yellowish brown (10YR 6/4) very gravelly clay, brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; hard, firm, very sticky and plastic; few fine and medium roots; few fine tubular pores; many moderately thick clay films on faces of peds and rock fragments; 40 percent pebbles, 5 percent cobbles; neutral (pH 7.3); abrupt irregular boundary. (1 to 10 inches thick)

2R—34 inches; hard, fractured rhyolite.

Type location: Pershing County, Nevada; in the Humboldt Range, about 200 feet north and 1,820 feet west of the southeast corner of sec. 27, T. 29 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 43 to 47 degrees F
Depth to bedrock: 20 to 40 inches

A horizon:
- Hue—10YR or 2.5Y
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—granular or platy
- Reaction—slightly acid to mildly alkaline

Bt horizon:
- Hue—10YR or 7.5YR; 2.5Y in the lower part of the horizon in some pedons
- Value—5 to 7 dry, 3 to 7 moist
- Chroma—3 to 6
- Texture—very gravelly clay or very gravelly clay loam
- Content of clay—35 to 50 percent
- Content of rock fragments—35 to 50 percent, mainly pebbles
- Structure—moderate or strong, medium or fine, angular or subangular blocky
- Reaction—neutral to moderately alkaline, generally becoming more alkaline with depth
- Other features—secondary carbonates and violent effervescence in the lower part of the horizon in some pedons

Say Series

The Say series consists of moderately deep, well drained, moderately permeable soils that formed in residuum weathered from granite. Say soils are on side slopes of mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Fine-loamy, mixed, frigid Aridic Argixerolls

Typical pedon: Say stony loam, 30 to 50 percent slopes, in an area of Gol-Say association where pebbles cover about 10 percent, cobbles 5 percent, and stones 3 percent of the surface:

A1—0 to 3 inches; brown (10YR 5/3) stony loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; common very fine vesicular pores; 9 percent pebbles, 2 percent cobbles, 1 percent stones; mildly alkaline (pH 7.4); clear smooth boundary. (3 to 5 inches thick)

A2—3 to 9 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; weak very thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine tubular pores; 7 percent pebbles, 15 percent cobbles, 1 percent stones; mildly alkaline (pH 7.4); clear smooth boundary. (4 to 6 inches thick)

BA—9 to 12 inches; yellowish brown (10YR 5/4) cobbly 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; common very fine and few fine tubular pores; 6 percent pebbles, 20 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary. (0 to 6 inches thick)

Bt—12 to 19 inches; yellowish brown (10YR 5/4) cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine tubular pores; few thin clay films on faces of peds and lining pores; 8 percent pebbles, 10 percent cobbles; neutral (pH 7.2); clear smooth boundary. (7 to 17 inches thick)

C—19 to 25 inches; yellowish brown (10YR 5/4) gravelly coarse sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and few medium roots; few fine and very fine

tubular pores; 20 percent pebbles, 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary. (1 to 10 inches thick)
Cr—25 inches; weathered granite.

Type location: Pershing County, Nevada; in the southern part of the East Range, about 200 feet south and 300 feet west of the northeast corner of sec. 22, T. 28 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from July through October
Soil temperature: 43 to 47 degrees F
Mollic epipedon: 7 to 12 inches thick
Thickness of the solum: 19 to 32 inches
Depth to paralithic contact: 20 to 40 inches
Control section: Content of clay—18 to 25 percent; content of rock fragments—15 to 35 percent
Reaction throughout the profile: Neutral or mildly alkaline
Other features: Noncalcareous throughout the profile; a thin BA horizon in most pedons

A horizon:
Chroma—2 or 3

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Texture—gravelly loam, gravelly sandy clay loam, cobbly loam, or cobbly sandy clay loam
Content of sand—more than 45 percent
Reaction—neutral or mildly alkaline

C horizon:
Value—5 or 6 dry, 3 or 4 moist
Texture—gravelly sandy loam, gravelly loamy sand, very gravelly sandy loam, or very gravelly loamy sand
Content of clay—4 to 15 percent
Content of rock fragments—20 to 50, dominantly pebbles
Consistence—slightly hard or loose
Other features—discontinuous in some pedons

Schamp Series

The Schamp series consists of very deep, well drained, moderately slowly permeable soils that formed in alluvium and colluvium derived from tuff, andesite, and basalt and mixed with volcanic ash. Schamp soils are on side slopes of foothills. Slopes are 15 to 30 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Haplargids

Typical pedon: Schamp loam, 15 to 30 percent slopes, in an area of Bojo Variant-Schamp-Trunk association where pebbles cover about 20 percent of the surface:

A1—0 to 3 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine vesicular pores; 10 percent pebbles, 2 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 5 inches thick)
A2—3 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; 10 percent pebbles, 2 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary. (2 to 5 inches thick)
Bt1—6 to 13 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and few fine and medium roots; common very fine tubular pores; common thin clay films on faces of peds and lining pores; 10 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (5 to 9 inches thick)
Bt2—13 to 28 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 4/4) moist; moderate fine prismatic structure; hard, firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; continuous, thin clay films on faces of peds; 5 percent pebbles; moderately alkaline (pH 8.0); clear wavy boundary. (10 to 20 inches thick)
Btk—28 to 34 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 4/4) moist; moderate fine prismatic structure; hard, firm, very sticky and very plastic; common very fine roots; few very fine tubular pores; continuous, thin clay films on faces of peds; 5 percent pebbles; strongly effervescent; common fine lime filaments; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 10 inches thick)
2Bk—34 to 60 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 20 percent cobbles, 20 percent pebbles; strongly effervescent; common fine lime filaments; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; near Golconda Pass, in the Tobin Range, about 2,000 feet south and 1,800 feet east of the northwest corner of sec. 16, T. 28 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 50 degrees F
Depth to the base of the argillic horizon: 27 to 36 inches
Control section: Content of clay—35 to 60 percent; reaction—neutral or mildly alkaline in the upper part, moderately alkaline or strongly alkaline in the lower part

A horizon:
- Value—5 or 6 dry, 3 or 4 moist; more than 5.5 dry and 3.5 moist when the uppermost 7 inches is mixed
- Chroma—2 or 3
- Structure—weak or moderate, thin to thick platy; granular in some pedons
- Consistence—soft or slightly hard

Bt horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 to 4
- Texture—clay or clay loam
- Content of clay—35 to 60 percent
- Content of rock fragments—as much as 25 percent pebbles in any one subhorizon
- Structure—fine to coarse prismatic or moderate or strong, fine to coarse subangular or angular blocky
- Thickness of the argillic horizon—24 to 32 inches
- Carbonates—noneffervescent in the upper part of the horizon and effervescent in the lower part; few to many fine to coarse lime segregations

Bk horizon:
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—sandy loam, sandy clay loam, or very cobbly loam
- Content of clay—10 to 25 percent
- Content of rock fragments—15 to 80 percent, mainly cobbles and stones, generally increasing in amount with depth
- Reaction—strongly alkaline or very strongly alkaline
- Secondary carbonates—rock fragments generally coated at least on their underside

Shabliss Series

The Shabliss series consists of shallow, well drained, moderately permeable soils that formed in alluvium derived from mixed rock sources and in a mantle of loess high in content of volcanic ash. Shabliss soils are on partial ballenas and fan piedmont remnants. Slopes are 2 to 50 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Haploxerollic Durorthids

Typical pedon: Shabliss gravelly loam, 30 to 50 percent slopes, in an area of Eastwell-Shabliss-Blackhawk association where pebbles cover about 25 percent and cobbles 5 percent of the surface:

A—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; strong thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine vesicular and few very fine tubular pores; 15 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 5 inches thick)

Bw—3 to 15 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; 10 percent pebbles; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (7 to 13 inches thick)

Bqk—15 to 19 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent pebbles; 5 percent durinodes; violently effervescent; coatings of lime on pebbles; moderately alkaline (pH 8.2); abrupt wavy boundary. (0 to 6 inches thick)

Bqkm—19 to 30 inches; very pale brown (10YR 8/3), strongly cemented duripan, very pale brown (10YR 7/3) moist; massive; very hard, very firm; common very fine and few fine roots in fractures; discontinuous silica laminae; 50 percent pebbles, 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (10 to 20 inches thick)

2Ck—30 to 60 inches; light gray (10YR 7/2) very gravelly loamy sand, grayish brown (10YR 5/2) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many fine interstitial pores; 30 percent pebbles, 5 percent cobbles; strongly effervescent; thin lime coatings on rock fragments; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; about 3 miles southwest of Imlay, about 300 feet south and 1,500 feet west of the northeast corner of sec. 20, T. 32 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 55 degrees F
Depth to the base of the Bw horizon: 10 to 15 inches
Depth to a strongly cemented duripan: 10 to 20 inches
Control section: Content of clay—5 to 15 percent; texture—averages very fine sandy loam, silt loam, or loam that has thin strata of fine sandy loam in some pedons
Reaction throughout the profile: Neutral to strongly alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3
Reaction—neutral to moderately alkaline

Bw horizon:
Value—5 or 6 dry
Chroma—2 to 4
Reaction—neutral to strongly alkaline

Bq or Bqk horizon (not in all pedons):
Cementation—5 to 45 percent durinodes in a friable or brittle matrix

Bqkm horizon:
Structure—platy or massive
Consistence—very hard or extremely hard
Other features—two or more strongly cemented layers interbedded with weakly cemented material in some pedons

C horizon:
Content of clay—0 to 10 percent
Reaction—moderately alkaline to very strongly alkaline
Cementation—in the Cqk horizon, which occurs in some pedons, extremely hard, extremely firm, brittle, ⅛- to ½-inch, cylindrical durinodes in a friable or firm matrix or 5 to 45 percent weak, continuous silica cementation
Other features—gravelly or very gravelly loamy sand below the duripan in some pedons

Singatse Series

The Singatse series consists of very shallow, somewhat excessively drained, moderately permeable soils that formed in residuum and colluvium derived from rhyolite, dacite, and granitic rocks. Singatse soils are on side slopes of hills and mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Lithic Torriorthents

Typical pedon: Singatse extremely cobbly loam, 50 to 75 percent slopes, in an area of Theon-Singatse-Rock outcrop association where pebbles cover about 30 percent, cobbles 35 percent, and stones 15 percent of the surface:

A—0 to 4 inches; pale brown (10YR 6/3) extremely cobbly loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine vesicular pores; 35 percent pebbles, 35 percent cobbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 5 inches thick)

C—4 to 8 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 45 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 6 inches thick)

2R—8 inches; granite; weathered in parts of the upper 7 inches.

Type location: Pershing County, Nevada; in the southern part of the Eugene Mountains, about 1,700 feet south and 2,200 feet east of the northwest corner of sec. 27, T. 33 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring
Soil temperature: 49 to 54 degrees F
Depth to lithic contact: 4 to 10 inches
Control section: Content of clay—5 to 15 percent; content of rock fragments—35 to 60 percent, mostly pebbles; texture—very gravelly loam or very gravelly sandy loam
Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

C horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3

Slaven Series

The Slaven series consists of moderately deep, well drained, slowly permeable soils that formed in residuum weathered from chert, shale, and quartzite and in a

small component of loess and volcanic ash. Slaven soils are on side slopes of hills and mountains. Slopes are 15 to 75 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 44 F.

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls

Typical pedon: Slaven very cobbly loam, 30 to 50 percent slopes, in an area of Slaven-Linrose-Iver association where pebbles cover about 25 percent, cobbles 20 percent, and stones 1 percent of the surface:

A1—0 to 5 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine vesicular pores; 25 percent pebbles, 15 percent cobbles; neutral (pH 7.0); clear smooth boundary. (3 to 7 inches thick)

A2—5 to 10 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; 35 percent pebbles; neutral (pH 7.2); clear smooth boundary. (3 to 7 inches thick)

Bt1—10 to 15 inches; light yellowish brown (10YR 6/4) extremely gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and few coarse roots; many very fine and common fine tubular pores; common thin clay films on faces of peds and lining pores; 55 percent pebbles, 5 percent cobbles; neutral (pH 7.2); clear smooth boundary. (4 to 8 inches thick)

Bt2—15 to 25 inches; light brown (7.5YR 6/4) extremely gravelly clay, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and coarse roots; common very fine and few fine tubular pores; continuous, thin clay films; 60 percent pebbles, 5 percent cobbles; neutral (pH 7.3); gradual smooth boundary. (8 to 12 inches thick)

Bt3—25 to 36 inches; light brown (7.5YR 6/4) extremely gravelly clay, brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, sticky and very plastic; few very fine, fine, and medium roots; few very fine tubular pores; continuous, thin clay films; 50 percent pebbles, 10 percent cobbles; neutral (pH 7.3); abrupt wavy boundary. (0 to 12 inches thick)

R—36 inches; chert.

Type location: Pershing County, Nevada; in the Tobin Range, about 800 feet north and 700 feet west of the southeast corner of sec. 6, T. 28 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 7 to 12 inches thick; commonly includes the upper part of the argillic horizon
Depth to bedrock: 20 to 40 inches
Reaction throughout the profile: Slightly acid or neutral

A horizon:
- Hue—10YR or 7.5YR
- Value—5 or 6 dry (value of 6 only to a depth of 2 inches or less; value of less than 5.5 when the uppermost 7 inches is mixed)
- Chroma—2 or 3
- Structure—weak or moderate, very fine or fine, subangular blocky, granular, or platy; massive in some pedons

Bt horizon:
- Hue—10YR or 7.5YR
- Value—4 to 6 dry, 3 to 5 moist
- Chroma—commonly 3 or 4; as high as 6 in some pedons
- Texture—clay, sandy clay, or clay loam
- Content of clay—35 to 45 percent
- Content of rock fragments—average of 60 to 75 percent; ranging from 50 to 75 percent in the upper part of the horizon
- Structure—weak or moderate, fine or medium, angular or subangular blocky
- Consistence—hard or very hard, friable or firm

Slaw Series

The Slaw series consists of very deep, well drained, slowly permeable soils that formed in alluvium derived from mixed sources. Slaw soils are on lake plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 54 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Typic Torrifluvents

Typical pedon: Slaw silt loam, 0 to 2 percent slopes, in an area of Slaw-Ragtown association:

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; strong very thin platy structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; few very fine, fine, and medium vesicular pores; strongly effervescent;

strongly alkaline (pH 9.0); clear smooth boundary. (1 to 6 inches thick)

A2—3 to 6 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; few vertical salt seams; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (1 to 5 inches thick)

C1—6 to 10 inches; pale brown (10YR 6/3), finely stratified silty clay loam on average, dark brown (10YR 4/3) moist; massive; slightly hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (2 to 6 inches thick)

2C2—10 to 22 inches; pale brown (10YR 6/3), finely stratified silty clay loam on average, dark brown (10YR 4/3) moist; massive; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (10 to 14 inches thick)

3C3—22 to 38 inches; very pale brown (10YR 7/3), finely stratified silty clay loam on average, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); gradual smooth boundary. (10 to 20 inches thick)

3C4—38 to 51 inches; very pale brown (10YR 7/3), finely stratified silty clay loam on average, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2); gradual smooth boundary. (10 to 30 inches thick)

3C5—51 to 60 inches; very pale brown (10YR 7/3), finely stratified silty clay loam on average, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.2).

Type location: Pershing County, Nevada; in the northern part of Dixie Valley, about 800 feet south and 1,400 feet east of the northwest corner of sec. 27, T. 25 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually dry; moist in some part for short periods in winter and early spring and for 10 to 20 cumulative days between July and October, the result of convection storms

Soil temperature: 53 to 57 degrees F

Control section: Content of clay—18 to 35 percent; texture—silty clay loam or silt loam

Calcium carbonate equivalent: 1 to 4 percent

Organic matter content: Decreases irregularly with depth

A horizon:
- Value—6 or 7 dry, 4, 5, or 6 moist
- Chroma—2, 3, or 4
- Structure—platy, blocky, or granular
- Reaction—strongly alkaline or very strongly alkaline
- Effervescence—slightly effervescent to violently effervescent

C horizon:
- Value—6, 7, or 8 dry, 4, 5, or 6 moist
- Chroma—2, 3, or 4
- Structure—subangular blocky or platy; massive in some pedons
- Reaction—strongly alkaline or very strongly alkaline
- Relict mottles—common in any subhorizon

Snapp Series

The Snapp series consists of very deep, well drained, slowly permeable soils that formed in alluvium weathered from mixed rock sources. Snapp soils are on fan piedmont remnants and ballenas. Slopes are 2 to 30 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Clayey over sandy or sandy-skeletal, montmorillonitic, mesic Durixerollic Natrargids

Typical pedon: Snapp gravelly very fine sandy loam, 2 to 8 percent slopes, in an area of Misad-Snapp-Oxcorel association where pebbles cover about 50 percent and cobbles 3 percent of the surface:

A1—0 to 5 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular pores; 20 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 6 inches thick)

A2—5 to 9 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 5 inches thick)

Btn—9 to 15 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; moderate fine and medium

angular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; few thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.2); clear smooth boundary. (0 to 10 inches thick)

Btnk1—15 to 21 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, firm, sticky and plastic; few very fine and fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 20 percent pebbles; few fine filaments and soft masses of lime; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (5 to 10 inches thick)

Btnk2—21 to 28 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; hard, firm, 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 lining pores; 20 percent pebbles; strongly effervescent; common medium lime filaments; very strongly alkaline (pH 9.6); clear smooth boundary. (4 to 9 inches thick)

Bqky1—28 to 39 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; weak, continuous silica cementation; 35 percent pebbles; few fine gypsum masses and filaments; strongly effervescent; many fine, medium, and coarse masses and filaments of lime; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 10 inches thick)

2Bqky2—39 to 51 inches; very pale brown (10YR 7/4) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; common very fine tubular pores; 60 percent pebbles; few fine masses and filaments of gypsum; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 20 inches thick)

2Bqk—51 to 60 inches; very pale brown (10YR 7/4) extremely gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; very hard, very firm, nonsticky and nonplastic; few very fine tubular pores; weak, discontinuous silica cementation; 70 percent pebbles; strongly effervescent; strongly alkaline (pH 8.5).

Type location: Pershing County, Nevada; in the southern part of Buffalo Valley, about 1,100 feet north and 1,500 feet east of the southwest corner of sec. 3, T. 28 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from June through October

Soil temperature: 47 to 52 degrees F

Combined thickness of the A and Bt horizons: 20 to 30 inches

Depth to discontinuity: 20 to 40 inches

Depth to the Bqk horizon: 20 to 30 inches

Depth to segregated lime: 3 to 17 inches

Reaction throughout the profile: Moderately alkaline to very strongly alkaline

Other features: A C horizon below a depth of 3 feet in some pedons

A1 horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2, 3, or 4

Bt horizon:
- Value—5 or 6 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—clay loam, gravelly clay loam, clay, or gravelly clay
- Content of clay—35 to 60 percent
- Content of rock fragments—5 to 35 percent, mainly pebbles
- Structure—angular blocky or prismatic
- Exchangeable sodium—15 to 25 percent

Bk horizon (not in all pedons):
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3, 4, or 5
- Content of rock fragments—15 to 35 percent, mainly pebbles
- Structure—subangular blocky; massive in some pedons

Bqk and 2Bqk horizons:
- Value—6, 7, or 8 dry, 5, 6, or 7 moist
- Chroma—3 to 6
- Texture of the 2B horizon—very gravelly or extremely gravelly loamy sand or sand
- Content of rock fragments—35 to 70 percent, mainly pebbles
- Segregated gypsum—soft masses or filaments of gypsum commonly in any subhorizon
- Silica cementation—weak, continuous silica cementation in subhorizons within a depth of 40 inches

Snowmore Series

The Snowmore series consists of moderately deep, well drained, moderately slowly permeable soils that formed in loess over residuum weathered from basalt.

Snowmore soils are on summits of hills and basalt plateaus. Slopes are 2 to 8 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durargids

Typical pedon: Snowmore very cobbly loam, 2 to 8 percent slopes, in an area of Alley-Snowmore-Rock outcrop association where pebbles cover about 15 percent, cobbles 15 percent, and stones 2 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine vesicular pores; 10 percent pebbles, 25 percent cobbles; slightly effervescent; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 4 inches thick)

A2—2 to 8 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine tubular pores; 15 percent pebbles, 20 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary. (0 to 6 inches thick)

Bt1—8 to 12 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and common fine roots; many very fine tubular pores; 5 percent pebbles, 5 percent cobbles; few thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 6 inches thick)

Bt2—12 to 16 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; many very fine tubular pores; 5 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 8 inches thick)

Bqk—16 to 24 inches; very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 5/3) moist; massive; hard, firm, sticky and plastic; few very fine roots; many very fine tubular pores; 15 percent pebbles, 5 percent cobbles, 25 percent pebble-sized duripan fragments; strongly effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary. (0 to 20 inches thick)

Bqkm—24 to 28 inches; white (10YR 8/2), indurated duripan, brown (10YR 5/3) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (4 to 10 inches thick)

2R—28 inches; basalt.

Type location: Pershing County, Nevada; in the eastern part of the East Range, about 1,300 feet west and 1,400 feet north of the southeast corner of sec. 29, T. 30 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 52 degrees F
Depth to the Bq horizon: 11 to 18 inches
Depth to a duripan: 20 to 26 inches
Depth to bedrock: 24 to 40 inches
Control section: Content of clay—20 to 35 percent; content of rock fragments—0 to 15 percent, mainly pebbles

A horizon:
Value—3 or 4 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry
Chroma—2 to 4
Texture—loam, clay loam, or sandy clay loam

Bq and Bqk horizons:
Value—6 or 7 dry, 4 or 5 moist
Texture—loam, gravelly or cobbly fine sandy loam, gravelly loam, or gravelly clay loam
Reaction—moderately alkaline or strongly alkaline

Bqkm horizon:
Value—7 or 8 dry, 4 or 5 moist
Chroma—2 or 3

Sodhouse Series

The Sodhouse series consists of shallow, well drained, moderately permeable soils that formed in alluvium derived from mixed rock sources and in loess high in content of volcanic ash. Sodhouse soils are on fan piedmont remnants. Slopes are 2 to 8 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durorthids

Typical pedon: Sodhouse gravelly very fine sandy loam, 2 to 8 percent slopes, in an area of Knott-Sodhouse-Wholan association where pebbles cover about 8 percent of the surface:

A1—0 to 2 inches; very pale brown (10YR 7/3) gravelly very fine sandy loam, brown (10YR 5/3) moist;

weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores; 15 percent pebbles; moderately alkaline (pH 7.9); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 5 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores; 5 percent pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 6 inches thick)

Bw1—5 to 10 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 5 percent pebbles; slightly effervescent; moderately alkaline (pH 8.2); gradual smooth boundary. (3 to 7 inches thick)

Bw2—10 to 14 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine tubular pores; 5 percent pebbles; slightly effervescent; common fine lime filaments; moderately alkaline (pH 8.4); abrupt smooth boundary. (3 to 6 inches thick)

Bqkm—14 to 29 inches; white (10YR 8/2), indurated duripan, light brownish gray (10YR 6/2) moist; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (10 to 24 inches thick)

2Ck—29 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; 60 percent pebbles; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; about 32 miles southeast of Winnemucca, in northern Buffalo Valley, about 900 feet west and 750 feet north of the southeast corner of sec. 21, T. 32 N., R. 41 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring

Soil temperature: 47 to 53 degrees F

Depth to an indurated duripan: 14 to 20 inches

Thickness of the duripan: 10 to 24 inches

Depth to the Ck horizon: 25 to 44 inches

Content of clay in the control section: 8 to 15 percent

Reaction throughout the profile: Moderately alkaline or strongly alkaline, generally becoming more alkaline with depth

Other features: Durinodes and lime accumulations in the subhorizons directly above the duripan in some pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Other features—normally noneffervescent; because of lime recharge from dust, slightly effervescent in some pedons

Bw horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—3 or 4
- Texture—very fine sandy loam, fine sandy loam, loam, or gravelly loam
- Content of rock fragments—5 to 35 percent, mainly pebbles

Bqkm horizon:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 4
- Structure—platy or massive

2Ck horizon:
- Texture—extremely gravelly sandy loam or very gravelly loamy sand

Sondoa Series

The Sondoa series consists of very deep, well drained soils that formed in alluvium and lacustrine sediments derived from mixed rock sources. Sondoa soils are on stream terraces and lake plain terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Sondoa silt loam, 0 to 2 percent slopes, in an area of Sondoa-Swingler-Isolde association:

A1—0 to 2 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; strong thick platy structure; slightly hard, friable, very sticky and plastic; few very fine roots; many very fine and fine and common medium and coarse vesicular pores; violently effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary. (1 to 5 inches thick)

A2—2 to 6 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; strong very thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine tubular pores; strongly effervescent;

very strongly alkaline (pH 9.4); abrupt smooth boundary. (0 to 5 inches thick)

C1—6 to 16 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; strong fine prismatic structure parting to medium subangular blocky; hard, firm, sticky and plastic; few very fine roots; many very fine, common fine and medium, and few coarse tubular pores; few crustacean shells one-quarter to one-half inch in diameter; few large manganese stains on faces of peds; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (5 to 15 inches thick)

C2—16 to 20 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; massive; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine and medium tubular pores; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (0 to 6 inches thick)

2C3—20 to 22 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine and medium tubular pores; silt coatings lining pores; strongly effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary. (2 to 12 inches thick)

3C4—22 to 26 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; massive; hard, firm, sticky and very plastic; few very fine and fine roots; many very fine and fine and common medium tubular pores; silt coatings lining pores; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (3 to 8 inches thick)

3C5—26 to 32 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, sticky and plastic; few very fine and medium roots; many very fine, common fine and medium, few coarse tubular pores; few large manganese stains; few crustacean shells one-quarter to one-half inch in diameter; strongly effervescent; very strongly alkaline (pH 9.2); gradual smooth boundary. (0 to 8 inches thick)

3C6—32 to 47 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, very sticky and plastic; few medium and coarse and common very fine and fine tubular pores; silt coatings lining pores; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (0 to 20 inches thick)

4C7—47 to 60 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; common medium reddish yellow (7.5YR 7/6) relict mottles; massive; slightly hard, firm, sticky and plastic; common medium and coarse and many very fine and fine tubular pores; silt coatings lining pores; common medium and large manganese stains; strongly effervescent; very strongly alkaline (pH 9.2).

Type location: Pershing County, Nevada; about 3 miles northeast of Toulon, about 2,400 feet east and 2,300 feet south of the northwest corner of sec. 26, T. 26 N., R. 30 E. (40 degrees, 5 minutes, 40 seconds north latitude and 118 degrees, 34 minutes, 50 seconds west longitude).

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring

Soil temperature: 53 to 57 degrees F

Control section: Content of clay—average of 25 to 35 percent; texture—stratified silt loam and silty clay loam

Reaction throughout the profile: Strongly alkaline or very strongly alkaline

Calcium carbonate equivalent: 4 to 12 percent

Effervescence: Strongly effervescent or violently effervescent

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 3, 4, or 5 moist; in a buried A horizon near flood plain remnants, value commonly of 3 moist and, when rubbed, lightening to 4 moist
- Chroma—2 or 3
- Other features—a buried A horizon in some pedons

C horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3 percent
- Texture—stratified silt loam and silty clay loam; thin or very thin varves of fine sand in some pedons
- Content of clay—25 to 35 percent
- Structure—prismatic or subangular blocky; massive in some pedons
- Reaction—strongly alkaline or very strongly alkaline
- Sodium adsorption ratio—more than 70
- Segregated lime—soft masses of lime in some subhorizons in some pedons
- Relict mottles—common in any subhorizon in the lower part of the profile

Sonoma Series

The Sonoma series consists of very deep, poorly drained, moderately permeable soils that formed in alluvium derived from mixed rock sources and in a component of volcanic ash. Sonoma soils are on flood plains and low stream terraces. Slopes are 0 to 2

percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Fluvaquents

Typical pedon: Sonoma silt loam, occasionally flooded, strongly saline-sodic:

A1—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and few fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 4 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; weak very thin platy structure; slightly hard, very friable, sticky and slightly plastic; many very fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (1 to 4 inches thick)

A3—4 to 9 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; strong thin platy structure; hard, firm, sticky and plastic; many very fine and common fine and medium roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (3 to 7 inches thick)

C1—9 to 15 inches; light brownish gray (10YR 6/2) silty clay loam, grayish brown (10YR 5/2) moist; massive; hard, firm, slightly sticky and plastic; many very fine, common fine, and few medium roots; many very fine and few fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (5 to 7 inches thick)

C2—15 to 34 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; massive; hard, firm, sticky and plastic; few very fine, fine, and medium roots; many very fine and fine and few medium tubular pores; violently effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (10 to 24 inches thick)

C3—34 to 60 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; massive; hard, friable, sticky and plastic; few very fine roots; many very fine and fine and common medium tubular pores; strongly effervescent; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; about 10 miles northeast of Imlay, on the flood plain along the Humboldt River, about 2,600 feet west and 1,700 feet south of the northeast corner of sec. 33, T. 34 N., R. 35 E.

Range in Characteristics

Soil moisture: Saturated in spring and early summer; unless the soils are drained, a water table below a depth of 40 inches during the rest of the year

Soil temperature: 49 to 53 degrees F

Control section: Content of clay—25 to 35 percent; texture—stratified silt loam to silty clay loam that has strata of clay or silty clay in some pedons

Carbonates: Calcium carbonate equivalent of 3 to 12 percent throughout the profile; strong or violent effervescence

Other features: A buried A horizon at a depth of 30 to 55 inches in some pedons

A horizon:
- Hue—2.5Y or 10YR
- Value—3 to 5 moist
- Reaction—moderately alkaline or very strongly alkaline; moderately alkaline or strongly alkaline in the buried A horizon

C horizon:
- Hue—10YR to 5Y
- Value—6 to 8 dry, 3 to 5 moist
- Chroma—dominantly 1 or 2; subhorizons with chroma of 3 in some pedons
- Structure—platy or subangular blocky; massive in some pedons
- Reaction—moderately alkaline to very strongly alkaline
- Other features—freshwater crustacean shells and lime concretions one-quarter to one-half inch in diameter in most pedons

Spinlin Series

The Spinlin series consists of moderately deep, well drained, slowly permeable soils that formed in residuum and colluvium derived from quartzite, chert, and rhyolite. Spinlin soils are on north aspects of side slopes on mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 13 inches, and the mean annual temperature is about 38 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic Argic Cryoborolls

Typical pedon: Spinlin very stony silt loam, 30 to 50 percent slopes, in an area of Golsum-Spinlin-Harcany association; in Humboldt County, east part:

A—0 to 6 inches; grayish brown (10YR 5/2) very stony silt loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine

roots; many very fine interstitial pores; 15 percent pebbles, 10 percent stones; neutral (pH 6.8); clear wavy boundary. (4 to 12 inches thick)

Bt1—6 to 16 inches; grayish brown (10YR 5/2) very cobbly clay, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; hard, firm, very sticky and very plastic; common very fine roots; common very fine interstitial and tubular pores; many thin clay films on faces of peds and lining pores; 20 percent cobbles, 15 percent pebbles; neutral (pH 6.8); abrupt wavy boundary. (6 to 15 inches thick)

Bt2—16 to 24 inches; brown (10YR 4/3) very cobbly clay, dark yellowish brown (10YR 3/4) moist; weak fine prismatic structure; very hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; many thin and few moderately thick clay films on faces of peds and lining pores; 20 percent cobbles, 15 percent pebbles; neutral (pH 7.0); clear wavy boundary. (6 to 12 inches thick)

Btk—24 to 36 inches; yellowish brown (10YR 5/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; weak fine angular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; few very fine interstitial and tubular pores; many thin clay films on faces of peds and lining pores; 25 percent cobbles, 15 percent pebbles; coatings of lime on cobbles and pebbles; many medium distinct lime mottles; strongly effervescent in the matrix and violently effervescent on coatings and mottles; moderately alkaline (pH 8.4); abrupt wavy boundary. (6 to 18 inches thick)

2Cr—36 inches; yellowish brown (10YR 5/4) saprolite weathered from quartzite and chert.

Type location: Humboldt County, Nevada; about 1,800 feet east and 900 feet north of the southwest corner of sec. 23, T. 34 N., R. 39 E.

Range in Characteristics

Soil moisture: Moist in winter and spring, dry from mid-July through October

Soil temperature: 36 to 41 degrees F

Average soil temperature in summer: 54 to 59 degrees F

Mollic epipedon: 10 to 16 inches thick

Depth to paralithic contact: 30 to 40 inches

Depth to lime: 18 to 29 inches

Control section: Content of clay—40 to 60 percent; content of rock fragments—35 to 50 percent, mainly pebbles and cobbles

A horizon:
Chroma—2 or 3
Structure—platy, granular, or subangular blocky

Bt horizon:
Chroma—3 or 4
Texture—very gravelly or very cobbly clay
Structure—moderate or strong, very fine or fine, subangular or angular blocky in the upper few inches; strong fine or medium prismatic in the lower part in some pedons
Reaction—neutral in the upper part to moderately alkaline in the lower part

Sumine Series

The Sumine series consists of moderately deep, well drained, moderately permeable soils that formed in residuum and colluvium weathered from quartzite, latite, trachyte, breccia, and sandstone. Sumine soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Argixerolls

Typical pedon: Sumine cobbly loam, 30 to 50 percent slopes, in an area of Sumine-Gosumi-Nomara association where pebbles cover about 15 percent, cobbles 15 percent, and stones 5 percent of the surface:

A—0 to 2 inches; grayish brown (10YR 5/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure that parts to moderate very fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 10 percent pebbles, 15 percent cobbles, 4 percent stones; neutral (pH 7.0); clear wavy boundary. (1 to 4 inches thick)

Bt1—2 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 30 percent pebbles, 10 percent cobbles; few thin clay films on faces of peds and lining pores; neutral (pH 7.0); clear wavy boundary. (3 to 7 inches thick)

Bt2—7 to 12 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; common very fine roots; common very fine tubular pores; 20 percent pebbles, 15 percent cobbles; common thin clay films on faces of peds and lining pores; neutral (pH 7.2); abrupt wavy boundary. (3 to 7 inches thick)

Bt3—12 to 22 inches; yellowish brown (10YR 5/4) very gravelly clay loam, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; 30 percent

pebbles, 10 percent cobbles; few thin clay films lining pores; neutral (pH 7.0); abrupt irregular boundary. (9 to 26 inches thick)
2R—22 inches; fractured quartzite.

Type location: Pershing County, Nevada; about 8 miles south of Winnemucca, in the Sonoma Range, about 1,000 feet east and 300 feet south of the northwest corner of sec. 3, T. 34 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 42 to 47 degrees F
Mollic epipedon: 8 to 15 inches thick
Depth to bedrock: 20 to 40 inches
Combined thickness of the A and Bt horizons: 20 to 40 inches
Control section: Content of clay—25 to 35 percent, when mixed; texture—dominantly clay loam but thin horizons of loam or clay in some pedons; content of rock fragments—average of 35 to 60 percent
Reaction throughout the profile: Neutral or mildly alkaline

A horizon:
Chroma—2 or 3
Structure—weak or moderate, very thin to medium platy or very fine to medium, granular or subangular blocky
Consistence—soft or slightly hard, very friable or friable

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4
Structure—weak or moderate, very fine to medium, angular or subangular blocky; massive in the lower part in some pedons

Sumya Series

The Sumya series consists of shallow, well drained, slowly permeable soils that formed in residuum weathered from andesite flow and breccia. Sumya soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 11 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Clayey-skeletal, montmorillonitic, nonacid, frigid Lithic Xeric Torriorthents

Typical pedon: Sumya very cobbly clay loam, 30 to 50 percent slopes, in an area of Roca-Reluctan-Sumya association where pebbles cover about 25 percent, cobbles 15 percent, and stones 3 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine and fine vesicular pores; 20 percent pebbles, 15 percent cobbles, 3 percent stones; neutral (pH 7.2); clear smooth boundary. (1 to 5 inches thick)
A2—2 to 4 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, friable, sticky and plastic; common very fine and fine and few coarse roots; common fine tubular pores; 35 percent pebbles, 5 percent cobbles; neutral (pH 7.2); clear smooth boundary. (2 to 5 inches thick)
C—4 to 9 inches; light brown (7.5YR 6/4) very gravelly clay, dark brown (7.5YR 4/4) moist; massive; slightly hard, firm, sticky and plastic; common very fine and few fine to coarse roots; common fine tubular pores; 35 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.4); abrupt smooth boundary. (4 to 8 inches thick)
R—9 inches; andesite.

Type location: Pershing County, Nevada, in the southern part of the Tobin Range, about 2,200 feet north and 2,000 feet east of the projected southwest corner of sec. 3, T. 27 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from July through October
Soil temperature: 44 to 47 degrees F
Depth to bedrock: 7 to 12 inches
Control section: Content of clay—average of 35 to 45 percent; content of rock fragments—35 to 60 percent, mainly pebbles; reaction—neutral or mildly alkaline
Other features: Noncalcareous throughout the profile

A horizon:
Value—3 or 4 moist

C horizon:
Hue—10YR or 7.5YR
Chroma—3 or 4
Texture—very gravelly clay or very gravelly clay loam

Swingler Series

The Swingler series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in silty alluvium over lacustrine deposits derived from mixed rock sources. Swingler

soils are on lake plain terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Swingler silt loam, strongly saline-sodic, 0 to 2 percent slopes, in an area of Mazuma-Swingler-Trocken association:

A1—0 to 3 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine and medium vesicular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 8 inches thick)

A2—3 to 6 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; strong thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (2 to 8 inches thick)

C1—6 to 24 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few medium tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (8 to 20 inches thick)

C2—24 to 35 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; common fine distinct dark brown (7.5YR 4/4) relict mottles; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine and common medium tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (8 to 16 inches thick)

C3—35 to 60 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; common fine distinct dark brown relict mottles (7.5YR 4/4); massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; about 30 miles east of Lovelock, in Buena Vista Valley, about 700 feet east and 800 feet south of the projected northwest corner of sec. 34, T. 27 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; intermittently moist in winter and spring

Soil temperature: 53 to 57 degrees F

Depth to relict mottles: 19 to 40 inches

Content of clay in the control section: 18 to 25 percent

Effervescence: Strongly effervescent or violently effervescent throughout the profile in most pedons but effervescent to a depth of at least 30 inches and noneffervescent below that depth in some pedons

A horizon:
- Hue—10YR or 2.5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Reaction—mildly alkaline to very strongly alkaline

C horizon:
- Hue—10YR, 2.5Y, or 5Y
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—1, 2, or 3
- Texture—dominantly silt loam or very fine sandy loam but generally includes some thin lenses ranging from very fine sand to silty clay loam
- Reaction—mildly alkaline to strongly alkaline

Teguro Series

The Teguro series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum weathered from rhyolitic tuff. Teguro soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 45 degrees F.

Taxonomic class: Loamy, mixed, frigid Lithic Argixerolls

Typical pedon: Teguro very stony loam, 30 to 50 percent slopes, in an area of Jobpeak-Teguro-Rock outcrop association where stones cover about 3 percent, cobbles 10 percent, and pebbles 10 percent of the surface:

A1—0 to 2 inches; grayish brown (10YR 5/2) very stony loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine interstitial pores; 5 percent stones, 10 percent cobbles, 15 percent pebbles; neutral (pH 7.2); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 7 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine interstitial pores; 15

percent pebbles; neutral (pH 7.2); clear smooth boundary. (0 to 6 inches thick)

Bt1—7 to 12 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine to coarse roots; common very fine tubular pores; common thin clay films on faces of peds; 15 percent pebbles; neutral (pH 7.0); clear smooth boundary. (3 to 6 inches thick)

Bt2—12 to 19 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; few very fine to coarse roots; common very fine tubular pores; common thin clay films on faces of peds; 25 percent pebbles; mildly alkaline (pH 7.4); abrupt wavy boundary. (4 to 7 inches thick)

R—19 inches; fractured rhyolitic tuff.

Type location: Pershing County, Nevada; in the northern part of the Stillwater Range, about 2,400 feet east and 2,500 feet south of the northwest corner of sec. 15, T. 25 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from mid-July through early October

Soil temperature: 43 to 47 degrees F

Mollic epipedon: 7 to 12 inches thick; includes the upper part of the Bt horizon

Depth to bedrock: 14 to 20 inches

Control section: Content of clay—25 to 35 percent; content of rock fragments—15 to 35 percent, mainly pebbles

Reaction throughout the profile: Slightly acid or neutral

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—3 or 4 dry or moist
Texture—gravelly loam or gravelly clay loam

Tenabo Series

The Tenabo series consists of shallow, well drained, moderately permeable soils that formed in a thin loess mantle over alluvium derived from mixed rock sources. Tenabo soils are on fan piedmont remnants. Slopes are 2 to 15 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Loamy, mixed, mesic, shallow Typic Nadurargids

Typical pedon: Tenabo cobbly very fine sandy loam, 2 to 8 percent slopes, in an area of Tenabo-Daick-Oxcorel association:

A—0 to 5 inches; pale brown (10YR 6/3) cobbly very fine sandy loam, brown (10YR 4/3) moist; strong thick platy structure; soft, very friable, slightly sticky and slightly plastic; few medium and coarse, common fine, and many very fine roots; many very fine and common fine and medium vesicular pores; 10 percent pebbles, 10 percent cobbles; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (2 to 6 inches thick)

2Bt—5 to 11 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, very sticky and plastic; common very fine and fine roots; many very fine tubular pores; 5 percent pebbles; many clay films on faces of peds and lining pores; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (3 to 8 inches thick)

2Btnk—11 to 17 inches; very pale brown (10YR 7/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; soft, very friable, sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; 15 percent pebbles, 15 percent duripan fragments; few thin clay films on faces of peds and lining pores; violently effervescent; strongly alkaline (pH 8.6); abrupt smooth boundary. (3 to 7 inches thick)

2Bqkm—17 to 24 inches; white (10YR 8/2), indurated duripan, very pale brown (10YR 7/3) moist; massive; extremely hard, extremely firm; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 15 inches thick)

3C1—24 to 31 inches; pale brown (10YR 6/3) extremely gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine tubular pores; 55 percent pebbles, 10 percent cobbles, 10 percent duripan fragments; violently effervescent; strongly alkaline (pH 9.0); gradual smooth boundary. (5 to 15 inches thick)

3C2—31 to 60 inches; light gray (10YR 7/2) extremely gravelly loamy sand, light yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots;

common very fine tubular pores; 50 percent pebbles, 25 percent cobbles, 10 percent duripan fragments; violently effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; about 5 miles south of Needle Peak, in Jersey Valley, about 600 feet north and 1,200 feet west of the southeast corner of sec. 31, T. 28 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 47 to 51 degrees F
Control section: Content of clay—27 to 35 percent; content of rock fragments—less than 20 percent, when mixed
Depth to a duripan: 9 to 20 inches
Reaction: Moderately alkaline or strongly alkaline in the A and Bt horizons and moderately alkaline to very strongly alkaline below the Bt horizon
Effervescence: Ranging from noneffervescent at the surface to violently effervescent in the layer above the duripan in areas that are subject to recharge with lime

A horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3
Structure—weak or moderate, very thin to thick platy; granular in some pedons

Bt and Btn horizons:
Value—5 to 7 dry, 4 or 5 moist
Chroma—3, 4, or 6
Texture of the fine-earth fraction—clay loam, silty clay loam, or sandy clay loam; thin strata of silt loam in some pedons
Content of rock fragments—less than 20 percent, mainly pebbles; including some duripan fragments in some pedons
Structure—moderate fine or medium prismatic or subangular blocky
Reaction—moderately alkaline or strongly alkaline, generally becoming more alkaline with depth
Exchangeable sodium—15 to 30 percent
Carbonates—violently effervescent in the lower subhorizons in some pedons and segregated lime in those subhorizons

Bqkm horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—2 to 4
Other features—very hard to extremely hard, continuous laminae stratified with strongly cemented material

C horizon:
Texture—gravelly to extremely gravelly sand, loamy sand, or sandy loam
Content of rock fragments—15 to 85 percent, mainly pebbles and cobbles

Theon Series

The Theon series consists of shallow, well drained, moderately slowly permeable soils that formed in residuum and colluvium derived from andesite, dacite, rhyolite, or granitic rocks. Theon soils are on side slopes of hills and mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Haplargids

Typical pedon: Theon very cobbly loam, 30 to 50 percent slopes, in an area of Theon-Singatse-Rock outcrop association where pebbles cover about 10 percent, cobbles 20 percent, and stones 5 percent of the surface:

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine vesicular and few very fine tubular pores; 15 percent pebbles, 20 percent cobbles; mildly alkaline (pH 7.8); abrupt smooth boundary. (2 to 5 inches thick)

Bt—3 to 8 inches; pale brown (10YR 6/3) very gravelly sandy clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; 35 percent pebbles, 10 percent cobbles; few thin clay films on faces of peds and lining pores; moderately alkaline (pH 8.4); abrupt smooth boundary. (5 to 10 inches thick)

2R—8 inches; granite; weathered in parts of the upper 2 inches.

Type location: Pershing County, Nevada; in the southern part of the Eugene Mountains, about 2,200 feet south and 2,200 feet west of the northeast corner of sec. 27, T. 33 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring
Soil temperature: 53 to 59 degrees F

Combined thickness of the A and Bt horizons: 8 to 14 inches
Control section: Content of clay—25 to 35 percent; content of rock fragments—35 to 60 percent, mainly pebbles
Depth to lithic contact: 8 to 14 inches
Other features: Discontinuous, thin coatings of silica or of silica and lime along weak fracture planes in the bedrock in some pedons

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4
Content of rock fragments—35 to 80 percent, mainly pebbles and cobbles
Structure—platy or granular
Reaction—neutral to moderately alkaline

Bt horizon:
Hue—10YR, 7.5YR, or 5YR
Value—4 to 7 dry, 3, 4, or 5 moist
Chroma—3 or 4
Texture—very gravelly clay loam, very gravelly sandy clay loam, or very gravelly loam; extremely gravelly subhorizons in some pedons
Reaction—neutral to strongly alkaline

Toulon Series

The Toulon series consists of very deep, excessively drained, moderately rapidly permeable soils that formed in waterworn pebbles, sand, and a small amount of silt derived from mixed rock sources. Toulon soils are on barrier bars and offshore bars. Slopes are 2 to 8 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Sandy-skeletal, mixed, mesic Typic Camborthids

Typical pedon: Toulon very gravelly loam, 2 to 8 percent slopes, in an area of Mazuma-Toulon-Chumall association where pebbles cover about 75 percent of the surface:

A1—0 to 2 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine and few medium vesicular pores; 35 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 5 inches thick)
A2—2 to 5 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine roots; many very fine and few fine tubular pores; 25 percent pebbles; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 9 inches thick)
Bw1—5 to 13 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and few fine roots; common very fine tubular pores; 25 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 10 inches thick)
Bw2—13 to 18 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; common very fine tubular pores; 40 percent pebbles; reddish iron stains coating rock fragments; few patchy lime coatings on the underside of pebbles; slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (0 to 10 inches thick)
Bk1—18 to 28 inches; very pale brown (10YR 7/3) very gravelly coarse sand, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots; common very fine tubular pores; 40 percent pebbles; lime coatings on the underside of pebbles; slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (8 to 20 inches thick)
Bk2—28 to 60 inches; very pale brown (10YR 8/3) extremely gravelly coarse sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 70 percent pebbles; lime coatings on all sides of pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; about 12 miles southeast of Lovelock, in the Carson Sink, about 350 feet west and 1,600 feet south of the northeast corner of sec. 7, T. 25 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for intermittent periods in winter and spring
Soil temperature: 53 to 57 degrees F
Depth to the base of the Bw horizon: 13 to 20 inches
Reaction throughout the profile: Mildly alkaline to strongly alkaline
Other features: Commonly thinner A and Bw horizons on the lower parts of bars than on the higher parts

A horizon:
Hue—2.5Y or 10YR
Value—6 to 8 dry, 4 or 5 moist

Effervescence—noneffervescent to violently effervescent

Bw horizon:
Hue—2.5Y or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4
Texture—stratified very gravelly coarse sandy loam to very gravelly loam; fine strata of fine sandy loam and very fine sandy loam in some pedons
Content of rock fragments—25 to 60 percent, mostly pebbles
Structure—subangular blocky or massive
Effervescence—slightly effervescent to violently effervescent
Carbonates—few or no lime incrustations in the upper part of the horizon
Other features—no gypsum or tufa in some pedons; the number of relict oxide mottles increasing with depth

Bk horizon:
Texture—stratified gravelly coarse sand to extremely cobbly coarse sand
Content of clay—0 to 5 percent
Content of rock fragments—average of 5 to 35 percent cobbles and 45 to 60 percent pebbles; as much as 80 percent pebbles or cobbles in any single stratum

Trocken Series

The Trocken series consists of very deep, well drained, moderately permeable soils that formed in mixed alluvium. Trocken soils are on fan skirts and offshore bars. Slopes are 0 to 15 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Trocken very fine sandy loam, 0 to 2 percent slopes, in an area of Trocken-Ragtown association where pebbles cover about 15 percent and cobbles 1 percent of the surface:

A—0 to 3 inches; light gray (10YR 7/2) very fine sandy loam, grayish brown (10YR 5/2) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine vesicular pores; 10 percent pebbles; slightly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (1 to 6 inches thick)

Bw—3 to 9 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine roots; common very fine tubular pores; 45 percent pebbles; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (3 to 6 inches thick)

Bk1—9 to 13 inches; very pale brown (10YR 7/3) very gravelly sandy loam, grayish brown (10YR 5/2) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; few very fine and fine tubular pores; 35 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (3 to 7 inches thick)

Bk2—13 to 24 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; 35 percent pebbles; common fine and medium lime masses; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (7 to 15 inches thick)

2C1—24 to 38 inches; light gray (10YR 7/2) extremely gravelly loamy sand, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine tubular pores; 65 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (10 to 25 inches thick)

3C2—38 to 60 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 35 percent pebbles; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; about 10 miles south of Lovelock, in the Carson Sink, about 2,200 feet north and 1,200 feet east of the southwest corner of sec. 28, T. 25 N., R. 32 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring
Soil temperature: 53 to 57 degrees F
Combined thickness of the A and Bw horizons: 5 to 10 inches
Control section: Content of clay—8 to 18 percent; content of rock fragments—35 to 70 percent; texture—highly stratified with layers that average very cobbly loam to extremely gravelly coarse sandy loam and individual strata ranging from gravelly loam to extremely gravelly coarse sand
Reaction: Neutral to very strongly alkaline in the upper part of the profile and moderately alkaline to very strongly alkaline in the lower part

Other features: The C horizon is below a depth of 60 inches in some pedons.

A horizon:
Hue—10YR or 2.5Y
Value—5, 6, or 7 dry, 4, 5, or 6 moist
Chroma—2 or 3

Bw and Bk horizons:
Hue—7.5YR, 10YR, or 2.5Y
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4

Trocken Variant

The Trocken Variant consists of very deep, well drained, moderately rapidly permeable soils that formed in alluvium derived from mixed rock sources. Trocken Variant soils are on inset fans. Slopes are 2 to 8 percent. The mean annual precipitation is 7 to 10 inches, and the mean annual temperature is 45 to 49 degrees F.

Taxonomic class: Loamy-skeletal, mixed (calcareous), mesic Xeric Torriorthents

Typical pedon: Trocken Variant very gravelly very fine sandy loam, 2 to 8 percent slopes, in an area of Oxcorel-Whirlo-Trocken Variant association:

A1—0 to 2 inches; pale brown (10YR 6/3) very gravelly very fine sandy loam, brown (10YR 4/3) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine vesicular and tubular pores; 40 percent pebbles, 2 percent cobbles; strongly effervescent; moderately alkaline (pH 7.8); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 4/3) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine tubular pores; 15 percent pebbles, 2 percent cobbles; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (1 to 5 inches thick)

Bk1—5 to 11 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine, medium, and coarse roots; many very fine tubular pores; 50 percent pebbles, 7 percent cobbles; few thin lime coatings on the underside of coarse fragments; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary. (5 to 8 inches thick)

2Bk2—11 to 45 inches; pale brown (10YR 6/3), stratified very gravelly loamy sand and extremely gravelly fine sandy loam, brown (10YR 4/3) moist; massive; loose, nonsticky and nonplastic; many very fine and common fine and medium roots; many very fine and common fine and medium interstitial pores; 55 percent pebbles, 5 percent cobbles; thin lime coatings on the underside of coarse fragments; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (30 to 40 inches thick)

2C—45 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; 40 percent pebbles, 5 percent cobbles; strongly effervescent; very strongly alkaline (pH 9.4).

Type location: Pershing County, Nevada; in Jersey Valley, about 300 feet west and 1,900 feet north of the southeast corner of sec. 21, T. 27 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually dry; moist in late fall, winter, and spring

Soil temperature: 47 to 53 degrees F

Control section: Texture of the fine-earth fraction—stratified loam to loamy sand; content of pebbles—50 to 70 percent; reaction—mildly alkaline to very strongly alkaline, generally becoming more alkaline with depth; calcium carbonate equivalent—5 to 10 percent

Trunk Series

The Trunk series consists of moderately deep, well drained, very slowly permeable soils that formed in residuum and colluvium derived from quartzite, chert, and shale. Trunk soils are on crests and side slopes of mountains. Slopes are 4 to 50 percent. The mean annual precipitation is about 9 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Haplargids

Typical pedon: Trunk stony loam, 30 to 50 percent slopes, in an area of Trunk-Pocan association:

A—0 to 3 inches; light brownish gray (10YR 6/2) stony loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores; 25 percent pebbles, 2 percent cobbles, 1 percent stones; neutral (pH 7.0); clear smooth boundary. (3 to 6 inches thick)

Bt—3 to 12 inches; yellowish brown (10YR 5/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting to strong very fine subangular blocky; very hard, firm, sticky and plastic; common very fine and few fine and medium roots; common very fine and fine tubular pores; many thin and few moderately thick clay films on faces of peds and lining pores; 15 percent pebbles; neutral (pH 7.0); clear wavy boundary. (6 to 15 inches thick)

Btk1—12 to 20 inches; light yellowish brown (10YR 6/4) gravelly clay, yellowish brown (10YR 5/4) moist; very hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; 25 percent pebbles; many fine soft masses of lime; violently effervescent; moderately alkaline (pH 8.4); clear wavy boundary. (6 to 12 inches thick)

Btk2—20 to 30 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; 35 percent pebbles; many fine soft masses of lime; violently effervescent; moderately alkaline (pH 8.4); abrupt irregular boundary. (4 to 12 inches thick)

2R—30 inches; fractured quartzite; lime and clay coatings along fractures in the bedrock fragments.

Type location: Pershing County, Nevada; about 14 miles south of Winnemucca, in the Sonoma Range, about 1,000 feet north and 1,000 feet west of the southeast corner of sec. 11, T. 33 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist in late fall, winter, and early spring

Soil temperature: 48 to 53 degrees

Depth to bedrock: 20 to 40 inches

Depth to lime: 10 to 20 inches

A horizon:

Value—5 or 6 dry, 3 to 5 moist
Chroma—2 or 3
Reaction—neutral or mildly alkaline

Bt horizon:

Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4
Texture—gravelly clay loam or gravelly clay that has more than 30 percent sand
Content of clay—35 to 50 percent
Content of rock fragments—15 to 35 percent, mainly pebbles
Reaction—neutral or mildly alkaline in the noncalcareous upper part of the horizon, moderately or strongly alkaline in the calcareous lower part

Tusel Series

The Tusel series consists of deep, well drained, moderately slowly permeable soils that formed in residuum and colluvium weathered from quartzite, chert, and shale. Tusel soils are on side slopes of mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 17 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed Argic Pachic Cryoborolls

Typical pedon: Tusel cobbly loam, 30 to 50 percent slopes, in an area of Tusel-Layview-Rock outcrop association:

A1—0 to 2 inches; dark grayish brown (10YR 4/2) cobbly loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine tubular pores; 15 percent pebbles, 5 percent cobbles; neutral (pH 6.8); clear smooth boundary.

A2—2 to 12 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 20 percent pebbles; neutral (pH 6.8); clear smooth boundary.

A3—12 to 19 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; 40 percent pebbles, 10 percent cobbles; neutral (pH 6.8); clear smooth boundary.

2Bt1—19 to 24 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine roots; many very fine tubular pores; 45 percent pebbles, 20 percent cobbles; few thin clay films on faces of peds and lining pores; neutral (pH 6.8); clear smooth boundary.

2Bt2—24 to 42 inches; pale brown (10YR 6/3) very gravelly clay loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine roots; many very fine tubular pores; 40 percent pebbles, 10 percent cobbles; common thin clay films on faces of peds and lining

pores; neutral (pH 6.8); abrupt smooth boundary.
3R—42 inches; rhyolite.

Type location: Pershing County, Nevada; in the Humboldt Range, about 1,000 feet east and 700 feet north of the southwest corner of sec. 31, T. 30 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist from late fall through early summer, dry from late July through September
Soil temperature: 43 to 47 degrees F
Average soil temperature in summer: 58 to 59 degrees F
Mollic epipedon: 16 to 20 inches thick
Depth to the base of the Bt horizon: 36 to 50 inches
Depth to bedrock: 40 to more than 80 inches
Reaction throughout the profile: Slightly acid or neutral
Control section: Content of clay—25 to 35 percent; content of rock fragments—50 to 75 percent, mainly pebbles

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3
Structure—weak to strong, very fine to medium, granular or subangular blocky
Consistence—soft or slightly hard

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2, 3, or 4
Texture—very gravelly or extremely gravelly sandy clay loam or very gravelly or extremely gravelly clay loam having 40 to 60 percent sand
Content of clay—average of 25 to 35 percent
Content of rock fragments—40 to 60 percent pebbles and 10 to 25 percent cobbles
Structure—weak or moderate subangular blocky

Uripnes Series

The Uripnes series consists of very shallow, well drained, moderately rapidly permeable soils that formed in residuum weathered from granodiorite. Uripnes soils are on side slopes of mountains. Slopes are 15 to 30 percent. The mean annual precipitation is 6 to 8 inches, and the mean annual temperature is 47 to 50 degrees F.

Taxonomic class: Loamy-skeletal, mixed, nonacid, mesic, shallow Typic Torriorthents

Typical pedon: Uripnes very stony sandy loam, 15 to 30 percent slopes, in an area of Uripnes-Rock outcrop association where pebbles cover about 30 percent, cobbles 10 percent, and stones 5 percent of the surface:

A1—0 to 2 inches; light brownish gray (10YR 6/2) very stony sandy loam, grayish brown (10YR 5/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; few fine tubular and few medium and coarse vesicular pores; 30 percent pebbles, 10 percent cobbles, 5 percent stones; neutral (pH 7.2); abrupt smooth boundary. (1 to 3 inches thick)
A2—2 to 6 inches; light brownish gray (10YR 6/2) very gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure parting to strong fine granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine tubular pores; 50 percent pebbles; neutral (pH 7.2); clear wavy boundary. (1 to 12 inches thick)
Cr—6 to 22 inches; weathered granodiorite. (12 to 26 inches thick)
R—22 inches; unweathered granodiorite.

Type location: Pershing County, Nevada; in the northern part of the Stillwater Range, about 1,100 feet north and 700 feet east of the southwest corner of sec. 27, T. 25 N., R. 36 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter, spring, summer, and autumn
Soil temperature: 47 to 54 degrees F
Depth to weathered bedrock: 4 to 14 inches
Depth to unweathered bedrock: 20 to 40 inches
Control section: Texture of the fine-earth fraction—sandy loam or coarse sandy loam; content of clay—5 to 18 percent; content of rock fragments—35 to 60 percent, dominantly fine pebbles

Valmy Series

The Valmy series consists of very deep, well drained, moderately permeable soils that formed in a thin loess layer over loamy alluvium derived from mixed rock sources. Valmy soils are on inset fans on basin floor remnants and alluvial flat remnants. Slopes are 0 to 8 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 51 degrees F.

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents

Typical pedon: Valmy loamy fine sand, loamy substratum, 2 to 8 percent slopes, in an area of Bubus-Valmy association where pebbles cover about 10 percent of the surface:

A—0 to 3 inches; light brownish gray (10YR 6/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; common very fine and few fine roots; many very fine interstitial pores; 5 percent pebbles; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 4 inches thick)

C—3 to 10 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; many very fine and few fine roots; common very fine tubular pores; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (5 to 18 inches thick)

Cqk—10 to 19 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine and few fine and medium roots; common very fine tubular pores; 20 percent hard, firm, 15- to 25-millimeter durinodes; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (7 to 12 inches thick)

Ck—19 to 29 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; few very fine tubular pores; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (6 to 14 inches thick)

C'qk—29 to 44 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; few very fine tubular pores; 40 percent hard, firm, 15- to 35-millimeter durinodes; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (10 to 20 inches thick)

2Ck—44 to 60 inches; pale brown (10YR 6/3) gravelly very fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 15 percent pebbles; violently effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; about 3 miles west of Imlay, about 2,400 feet north and 300 feet west of the southeast corner of sec. 12, T. 32 N., R. 33 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring

Soil temperature: 47 to 53 degrees F

Depth to the Cq horizon: 8 to 20 inches

Durinodes in the Cq horizon: Making up 5 to 85 percent of the volume in any one horizon; more than 25 percent in one or more horizons more than 6 inches thick

Depth to unconformity: 30 to 50 inches; sandy material at a depth of more than 50 inches in some pedons

Control section: Texture—mainly fine sandy loam or sandy loam but includes strata of very fine sandy loam and coarse sandy loam in some pedons; content of clay—5 to 15 percent; content of rock fragments—0 to 30 percent, mainly pebbles

A horizon:
- Hue—10YR or 2.5Y
- Value—5 or 6 dry, 3 or 4 moist
- Reaction—moderately alkaline or strongly alkaline

C horizon:
- Hue—10YR or 2.5Y
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Durinodes—hard to extremely hard, firm or very firm, and brittle
- Reaction—strongly alkaline or very strongly alkaline
- Effervescence—slightly effervescent to violently effervescent

2C horizon:
- Texture—gravelly sand or very gravelly sand; silty clay loam below a depth of 40 inches in some areas of loamy substratum phases
- Content of clay—1 to 5 percent
- Content of rock fragments—15 to 55 percent, mostly pebbles
- Reaction—strongly alkaline or very strongly alkaline

Wendane Series

The Wendane series consists of very deep, somewhat poorly drained, moderately slowly permeable soils that formed in silty alluvium derived from mixed sediments. Wendane soils are on alluvial flat remnants and lake plains. Slopes are 0 to 4 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Wendane silt loam, drained, 0 to 2 percent slopes, in an area of Wendane-Yobe association:

A—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; 2 percent pebbles; slightly

effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (1 to 6 inches thick)

C—2 to 11 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; 2 percent pebbles; strongly effervescent; very strongly alkaline (pH 9.4); clear smooth boundary. (5 to 16 inches thick)

Cqk1—11 to 18 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and fine and few medium tubular pores; 20 percent 5- to 25-millimeter durinodes; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. (6 to 30 inches thick)

Cqk2—18 to 30 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine roots; many very fine and few fine and medium tubular pores; 30 percent 5- to 25-millimeter durinodes; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (0 to 17 inches thick)

Cqk3—30 to 60 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; few fine distinct yellowish red (5YR 4/6) mottles; massive; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and common fine and medium tubular pores; 25 percent 5- to 25-millimeter durinodes; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; in the southern part of Buffalo Valley, about 400 feet east and 500 feet south of the northwest corner of sec. 7, T. 29 N., R. 41 E.

Range in Characteristics

Soil moisture: Saturated at a depth of 28 to 40 inches in the spring of most years; dry from mid-summer through mid-winter, moist in mid-winter, spring, and early summer; an apparent seasonal high water table at a depth of 2.5 to 4.0 feet from February through July; drained phases in some areas

Soil temperature: 47 to 52 degrees F

Mineralogy: Mixed but strongly influenced by volcanic ash and other pyroclastic material

Depth to the Cqk horizon: 11 to 20 inches

Depth to high-chroma mottles: 13 to 27 inches

Control section: Content of clay—20 to 30 percent, when mixed; texture—averages silt loam or silty clay loam that has less than 15 percent fine sand and coarser sand

Salts: Normally strongly saline affected in the upper part of the profile and unaffected or slightly affected in the lower part

Exchangeable sodium: 15 to 70 percent in half or more of the upper 20 inches but decreases with depth

Reaction throughout the profile: Moderately alkaline to very strongly alkaline

Other features: Unconformable, stratified gravelly sand or very gravelly sand below a depth of 40 inches in some pedons

A horizon:
- Value—6 or 7 dry, 4 to 6 moist
- Chroma—1 to 4
- Structure—thin to thick platy or fine granular; massive in some pedons
- Consistence—very friable to firm, slightly sticky to very sticky and slightly plastic to very plastic

C and Cqk horizons:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 4 to 7 moist
- Chroma—1 to 4
- Texture—stratified very fine sandy loam, silt loam, silty clay loam, or clay loam
- Other features—strata of volcanic ash that are 4 to 10 inches thick commonly at some depth between 13 and 36 inches

Cqk horizon:
- Thickness—13 to more than 30 inches
- Cementation—20 to 35 percent weakly or strongly cemented durinodes in a friable matrix and as much as 30 percent weak, discontinuous silica cementation in any one horizon

Wereld Series

The Wereld series consists of deep, well drained, moderately permeable soils that formed in residuum and colluvium derived from limestone, dolomite, and calcareous shale. Wereld soils are on side slopes of mountains. Slopes are 30 to 50 percent. The mean annual precipitation is about 14 inches, and the mean annual temperature is about 42 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Calcixerolls

Typical pedon: Wereld very gravelly silt loam, 30 to 50 percent slopes, in an area of Denay-Wereld-Xine association where pebbles cover 40 percent, cobbles 5 percent, and stones 2 percent of the surface:

A1—0 to 3 inches; grayish brown (10YR 5/2) very gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many

very fine roots; common very fine and few fine vesicular pores; 30 percent pebbles, 5 percent cobbles, 2 percent stones; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 5 inches thick)

A2—3 to 10 inches; grayish brown (10YR 5/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak very thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine tubular pores; 30 percent pebbles; strongly effervescent; thin lime coatings on the underside of pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 10 inches thick)

Bk1—10 to 17 inches; brown (10YR 5/3) very gravelly silt loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine and coarse roots; common very fine tubular pores; 40 percent pebbles; violently effervescent; thin lime coatings on the underside of pebbles; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 10 inches thick)

Bk2—17 to 25 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; 45 percent pebbles, 2 percent cobbles; violently effervescent; thin lime coatings on the underside of rock fragments; moderately alkaline (pH 8.0); clear smooth boundary. (8 to 25 inches thick)

Bk3—25 to 42 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; few very fine tubular pores; 50 percent pebbles, 5 percent cobbles; violently effervescent; thin lime coatings on all sides of rock fragments; moderately alkaline (pH 8.4); abrupt smooth boundary. (6 to 20 inches thick)

2R—42 inches; hard, fractured calcareous shale.

Type location: Pershing County, Nevada; near Star Peak, in the Humboldt Range, about 1,400 feet north and 1,900 feet east of the southwest corner of sec. 23, T. 31 N., R. 34 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Mollic epipedon: 10 to 15 inches thick
Depth to the calcic horizon: 20 to 34 inches
Depth to bedrock: 40 to 60 inches
Control section: Content of clay—12 to 18; content of rock fragments—50 to 70 percent, mainly pebbles
Reaction throughout the profile: Moderately alkaline or strongly alkaline

A horizon:
- Value—4 or 5 dry
- Chroma—2 or 3
- Structure—granular or platy

Bk1 and Bk2 horizons:
- Value—5 to 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Texture—very gravelly loam or very gravelly silt loam
- Content of clay—average of 12 to 18 percent
- Content of rock fragments—40 to 60 percent, mainly pebbles

Bk3 horizon:
- Texture—very gravelly loam, very gravelly silt loam, or extremely gravelly loam
- Content of rock fragments—50 to 75 percent, mainly pebbles
- Calcium carbonate equivalent—15 to 25 percent

Weso Series

The Weso series consists of very deep, well drained, moderately permeable soils that formed in alluvium derived from mixed rock sources. Weso soils are on fan skirts. Slopes are 0 to 8 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Duric Camborthids

Typical pedon: Weso very fine sandy loam, 0 to 2 percent slopes:

A1—0 to 2 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; moderate very thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine and few fine vesicular pores; moderately alkaline (pH 8.2); clear smooth boundary. (1 to 3 inches thick)

A2—2 to 7 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; common very fine tubular pores; moderately alkaline (pH 8.4); clear smooth boundary. (2 to 6 inches thick)

Bw—7 to 12 inches; very pale brown (10YR 7/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common very fine tubular pores; strongly

alkaline (pH 8.6); clear smooth boundary. (4 to 12 inches thick)

Bqk1—12 to 16 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, firm, nonsticky and nonplastic; common very fine and few medium and coarse roots; few very fine tubular pores; weak silica cementation; slightly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 10 inches thick)

Bqk2—16 to 25 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; few very fine tubular pores; 40 percent durinodes; strongly effervescent; very strongly alkaline (pH 9.6); clear smooth boundary. (7 to 20 inches thick)

Bqk3—25 to 40 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine tubular pores; weak, discontinuous silica cementation; strongly effervescent; very strongly alkaline (pH 9.6); clear smooth boundary. (10 to 20 inches thick)

2Bqk4—40 to 60 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine tubular pores; 40 percent durinodes; strongly effervescent; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; about 13 miles northeast of Imlay, near the Humboldt River, about 1,200 feet west and 500 feet north of the southeast corner of sec. 9, T. 34 N., R. 35 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and spring

Soil temperature: 47 to 53 degrees F

Depth to the base of the Bw horizon and silica cementation: 10 to 18 inches

Control section: Content of clay—5 to 15 percent; content of rock fragments—0 to 25 percent, mainly pebbles; texture—fine sandy loam, very fine sandy loam, or loam and, in some pedons, minor strata of sandy loam, coarse sandy loam, or silt loam

Reaction throughout the profile: Moderately alkaline to very strongly alkaline

Other features: Skeletal material below a depth of 40 inches in some pedons

A horizon:
- Value—6 or 7 dry, 3, 4, or 5 moist
- Chroma—2 or 3

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 to 4
- Other features—noncalcareous

Bqk horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Cementation—ranging from continuously, weakly silica-cemented to several weakly cemented plates as much as 1 inch thick; slightly more weakly cemented or friable material between the plates; subhorizons with durinodes in a friable matrix in some pedons

C horizon:
- Texture—stratified very gravelly loamy sand to fine sandy loam
- Content of rock fragments—average of 10 to 20 percent
- Reaction—strongly alkaline or very strongly alkaline
- Effervescence—noneffervescent to violently effervescent

Whirlo Series

The Whirlo series consists of very deep, well drained, moderately rapidly permeable soils that formed in alluvium derived from mixed rock sources and somewhat influenced by loess. Whirlo soils are on inset fans, fan aprons, fan collars, and fan skirts. Slopes are 0 to 15 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Camborthids

Typical pedon: Whirlo very fine sandy loam, 0 to 2 percent slopes, in an area of Oxcorel-Whirlo-Trocken Variant association where pebbles cover about 10 percent and cobbles 2 percent of the surface:

A1—0 to 3 inches; light brownish gray (10YR 6/2) very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; 15 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 4 inches thick)

A2—3 to 7 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 5 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (2 to 5 inches thick)

Bw—7 to 11 inches; light brownish gray (10YR 6/2) fine sandy loam, brown (10YR 4/3) moist; moderate fine

and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 10 percent pebbles; moderately alkaline (pH 8.2); clear smooth boundary. (3 to 13 inches thick)

2Bk1—11 to 16 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; 35 percent pebbles; strongly effervescent; many medium lime filaments; moderately alkaline (pH 8.4); clear wavy boundary. (0 to 10 inches thick)

2Bk2—16 to 30 inches; pale brown (10YR 6/3) very gravelly fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; 40 percent pebbles; strongly effervescent; lime coatings on the underside of pebbles; strongly alkaline (pH 8.8); clear smooth boundary. (10 to 20 inches thick)

2Bk3—30 to 42 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; 50 percent pebbles; strongly effervescent; lime coatings on the underside of pebbles; strongly alkaline (pH 8.8); clear wavy boundary. (8 to 15 inches thick)

2Bk4—42 to 60 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; 50 percent pebbles; strongly effervescent; common fine lime filaments; strongly alkaline (pH 8.8).

Type location: Pershing County, Nevada; in Jersey Valley, about 1,900 feet west and 1,300 feet north of the southeast corner of sec. 16, T. 27 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from mid-May through November

Soil temperature: 47 to 53 degrees F

Control section: Content of clay—5 to 15 percent; content of rock fragments—35 to 70 percent, mainly pebbles

Depth to the 2Bk horizon: 10 to 20 inches

A horizon:
- Value—6 or 7 dry, 3 or 4 moist
- Chroma—2 or 3
- Structure—weak or moderate, very thin to thick platy; granular in some pedons
- Reaction—neutral to moderately alkaline

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—gravelly sandy loam, fine sandy loam, very fine sandy loam, silt loam, or gravelly loam
- Content of rock fragments—0 to 30 percent pebbles
- Structure—weak or moderate, fine or medium subangular blocky or weak coarse prismatic
- Reaction—neutral to moderately alkaline

2Bk horizon:
- Hue—10YR or 2.5Y
- Value—6 to 8 dry, 3 to 6 moist
- Chroma—2 or 3
- Texture—stratified very gravelly loam to extremely gravelly coarse sandy loam
- Content of rock fragments—35 to 75 percent, mainly pebbles and some cobbles and stones
- Reaction—moderately alkaline or strongly alkaline
- Effervescence—slightly effervescent to violently effervescent
- Other features—as much as 10 percent weak durinodes in some subhorizons

Wholan Series

The Wholan series consists of very deep, well drained, moderately permeable soils that formed in loess and silty alluvium derived from mixed rock sources. Wholan soils are on inset fans and fan skirts. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 49 degrees F.

Taxonomic class: Coarse-silty, mixed, mesic Typic Camborthids

Typical pedon: Wholan very fine sandy loam, rarely flooded, 0 to 2 percent slopes:

A—0 to 5 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine and medium vesicular pores; moderately alkaline (pH 7.9); clear smooth boundary. (1 to 6 inches thick)

Bw1—5 to 14 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores;

moderately alkaline (pH 7.9); gradual smooth boundary. (4 to 13 inches thick)

Bw2—14 to 24 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; strongly alkaline (pH 8.6); gradual smooth boundary. (0 to 12 inches thick)

Bk1—24 to 38 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine tubular pores; slightly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (10 to 20 inches thick)

Bk2—38 to 60 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; slightly effervescent; few fine lime filaments; moderately alkaline (pH 8.4).

Type location: Pershing County, Nevada; in the southern part of Buffalo Valley, about 1,200 feet north and 2,200 feet west of the southeast corner of sec. 13, T. 28 N., R. 40 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist in winter and spring, dry from late May through October

Soil temperature: 47 to 53 degrees F

Control section: Content of clay—5 to 15 percent; texture—silt loam or very fine sandy loam having thin strata of loam or fine sandy loam in some pedons

Depth to the Bk horizon: 11 to 24 inches

Reaction throughout the profile: Moderately alkaline to very strongly alkaline, becoming more alkaline with depth

Salt and sodium: Not affected or slightly salt and sodium affected to a depth of 30 inches and moderately or strongly affected below that depth

Other features: Thin strata with as much as 5 percent very hard, firm, brittle durinodes one-half to three-quarters of an inch in size in the C horizon in some pedons

A horizon:
- Value—5 to 7 dry, 3 to 5 moist (5 dry and 3 moist in the A1 horizon only)
- Chroma—2 to 4
- Structure—weak or moderate, very thin to medium platy or coarse subangular blocky
- Consistence—soft or slightly hard
- Effervescence—noneffervescent or slightly effervescent

Bw horizon:
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 4
- Structure—weak fine to coarse subangular blocky or medium or coarse prismatic; massive in some pedons

Bk and C horizons:
- Value—6 to 8 dry, 4 to 6 moist
- Chroma—2 to 4
- Carbonates—few to many fine or medium veins and soft masses of lime in the Bk horizon; no segregated lime in the C horizon
- Durinodes—as much as 5 percent in the substratum in some pedons

Wiskan Series

The Wiskan series consist of moderately deep, well drained, moderately slowly permeable soils that formed in residuum weathered from siliceous chert, argillite, and volcanic rocks. Wiskan soils are on side slopes of mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 43 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Xerollic Haplargids

Typical pedon: Wiskan very gravelly loam, 30 to 50 percent slopes, in an area of Atlow-Wiskan association where pebbles cover about 35 percent, cobbles 15 percent, and stones 2 percent of the surface:

A1—0 to 3 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and common fine and medium vesicular pores; 40 percent pebbles, 5 percent cobbles; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 4 inches thick)

A2—3 to 9 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 40 percent pebbles, 5 percent cobbles; few thin clay films on faces of peds; mildly alkaline (pH 7.8); clear smooth boundary. (2 to 7 inches thick)

Btk1—9 to 13 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard,

friable, sticky and plastic; many very fine and common fine and medium roots; many very fine and fine tubular pores; 40 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds and lining pores; thin lime coatings on rock fragments; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (2 to 6 inches thick)

Btk2—13 to 35 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine, common fine, and few medium roots; common very fine and fine tubular pores; 40 percent pebbles, 5 percent cobbles; common thin clay films on faces of peds and lining pores; thin lime coatings on rock fragments; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary. (10 to 25 inches thick)

R—35 inches; argillite.

Type location: Pershing County, Nevada; in the southern part of the Tobin Range, about 2,500 feet south and 450 feet west of the northeast corner of sec. 18, T. 28 N., R. 39 E.

Range in Characteristics

Soil moisture: Usually dry; moist in winter and spring
Soil temperature: 44 to 47 degrees F
Depth to bedrock: 20 to 40 inches
Reaction throughout the profile: Mildly alkaline or moderately alkaline

A horizon:
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—2 or 3 dry or moist
- Structure—platy or granular
- Other features—too thin to meet the requirements for a mollic epipedon in areas where the horizon has mollic colors

Bt horizon:
- Hue—7.5YR or 10YR
- Value—5 or 6 dry, 3 to 5 moist
- Chroma—3 to 6
- Texture—very gravelly clay loam, very gravelly loam, or extremely gravelly clay loam
- Content of clay—25 to 35 percent
- Content of rock fragments—45 to 65 percent, mainly pebbles
- Structure—subangular blocky or prismatic
- Carbonates—few or no fine filaments or threads; thin coatings on some or all rock fragments; a noneffervescent or slightly effervescent matrix

Woolsey Series

The Woolsey series consists of very deep, somewhat excessively drained, moderately permeable soils that formed in mixed alluvium and lacustrine sediments. Woolsey soils are on fan piedmonts. Slopes are 2 to 8 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Coarse-loamy, mixed, mesic Typic Haplargids

Typical pedon: Woolsey gravelly fine sandy loam, 2 to 8 percent slopes, in an area of Mazuma-Bluewing-Woolsey association where pebbles cover about 40 percent and cobbles 2 percent of the surface:

A1—0 to 2 inches; pale brown (10YR 6/3) gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 15 percent pebbles; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (1 to 3 inches thick)

A2—2 to 5 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common very fine tubular pores; 15 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (1 to 5 inches thick)

A3—5 to 9 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine tubular pores; 15 percent pebbles; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (2 to 12 inches thick)

Btk—9 to 14 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few medium roots; common very fine and few fine tubular pores; 15 percent pebbles; few thin clay films on faces of peds; few fine lime filaments; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (4 to 10 inches thick)

Bt—14 to 34 inches; pale brown (10YR 6/3) sandy loam that has a few thin, discontinuous strata of very gravelly loamy sand; brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; 10 percent pebbles; few fine lime

filaments; strongly effervescent; strongly alkaline (pH 9.0); clear smooth boundary. (10 to 30 inches thick)

Bk—34 to 60 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, sightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 30 percent pebbles; common fine lime filaments; violently effervescent; strongly alkaline (pH 9.0).

Type location: Pershing County, Nevada; about 8 miles southwest of Lovelock, about 400 feet south and 200 feet west of the northeast corner of sec. 6, T. 25 N., R. 31 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; intermittently moist in winter and spring, dry from May through October

Soil temperature: 53 to 55 degrees F

Depth to the Bt horizon: 7 to 17 inches

Other features: Lacustrine sediments below a depth of 40 inches in some pedons

A horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Structure—platy; single grain in some pedons
- Consistence—loose, soft, or slightly hard
- Effervescence—slightly effervescent or strongly effervescent

Bt horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Content of clay—8 to 18 percent
- Content of rock fragments—15 to 35 percent, mainly pebbles
- Clay films—few or common, bridging peds or lining some pores
- Effervescence—slightly effervescent or strongly effervescent

Bk horizon:
- Hue—2.5Y or 10YR
- Value—6 or 7 dry, 4 or 5 moist
- Chroma—2 or 3
- Texture—stratified sandy loam or very gravelly sandy loam
- Content of clay—3 to 10 percent
- Content of rock fragments—10 to 35 percent, mainly pebbles
- Structure—subangular blocky, platy, or single grain; massive in some pedons
- Carbonates—few or common lime filaments
- Effervescence—slightly effervescent to violently effervescent

Xine Series

The Xine series consists of moderately deep, well drained, moderately permeable soils that formed in residuum weathered from limestone and calcareous shale. Xine soils are on side slopes of mountains. Slopes are 30 to 75 percent. The mean annual precipitation is about 12 inches, and the mean annual temperature is about 44 degrees F.

Taxonomic class: Loamy-skeletal, mixed, frigid Aridic Calcixerolls

Typical pedon: Xine gravelly silt loam, 50 to 75 percent slopes, in an area of Puffer-Xine-Rock outcrop association where pebbles cover about 25 percent, cobbles 5 percent, and stones 1 percent of the surface:

A1—0 to 3 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and vesicular pores; 15 percent pebbles; mildly alkaline (pH 7.8); clear smooth boundary. (1 to 4 inches thick)

A2—3 to 10 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine tubular pores; 15 percent pebbles; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary. (5 to 12 inches thick)

Bk1—10 to 17 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine tubular pores; 20 percent pebbles, 15 percent cobbles; strongly effervescent; lime coatings on the underside of rock fragments; moderately alkaline (pH 8.4); clear smooth boundary. (4 to 10 inches thick)

Bk2—17 to 26 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few coarse roots; many very fine tubular pores; 30 percent pebbles, 25 percent cobbles; violently effervescent; common fine lime filaments; lime coatings on all sides of rock fragments; moderately alkaline (pH 8.4); clear smooth boundary. (5 to 15 inches thick)

Bk3—26 to 38 inches; pale brown (10YR 6/3) very

cobbly loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; 20 percent pebbles, 25 percent cobbles, 1 percent stones; violently effervescent; lime coatings on all sides of rock fragments; moderately alkaline (pH 8.4); abrupt smooth boundary. (4 to 15 inches thick)

Cr—38 inches; weathered, fractured limestone.

Type location: Pershing County, Nevada; about 19 miles south of Winnemucca, in the East Range, about 1,950 feet south and 600 feet west of the northeast corner of sec. 28, T. 33 N., R. 37 E.

Range in Characteristics

Soil moisture: Usually moist during the growing season; moist from late fall through early summer, dry from July through October

Soil temperature: 44 to 46 degrees F

Mollic epipedon: 7 to 14 inches thick

Depth to paralithic contact: 20 to 40 inches

Depth to the calcic horizon: 10 to 25 inches

Control section: Texture—very cobbly loam or very cobbly sandy loam; content of clay—10 to 18 percent; content of rock fragments—35 to 60 percent, mainly cobbles; carbonates—25 to 40 percent calcium carbonate equivalent

Other features: The amount of secondary lime increasing with depth

A horizon:

Value—mainly 4 or 5 dry, 2 or 3 moist; thin horizons with value of 6 dry in some pedons

Chroma—2 or 3

Reaction—mildly alkaline or moderately alkaline

Bk horizon:

Value—5 to 7 dry, 3 to 5 moist

Chroma—3 or 4

Reaction—moderately alkaline or strongly alkaline

Yipor Series

The Yipor series consists of very deep, well drained, moderately permeable soils that formed in silty alluvium mixed with loess. Yipor soils are on inset fans, lake plain terraces, and stream terraces. Slopes are 0 to 2 percent. The mean annual precipitation is about 7 inches, and the mean annual temperature is about 47 degrees F.

Taxonomic class: Coarse-silty, mixed (calcareous), mesic Typic Torriorthents

Typical pedon: Yipor silt loam:

A1—0 to 2 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (1 to 4 inches thick)

A2—2 to 5 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (2 to 9 inches thick)

C1—5 to 17 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and few fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); gradual smooth boundary. (5 to 20 inches thick)

C2—17 to 36 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine and very fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary. (15 to 30 inches thick)

C3—36 to 60 inches; very pale brown (10YR 7/4) silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; in Pleasant Valley, about 1,400 feet north and 1,350 feet west of the southeast corner of sec. 12, T. 29 N., R. 38 E.

Range in Characteristics

Soil moisture: Usually dry; moist for short periods in winter and early spring

Soil temperature: 47 to 52 degrees F

Control section: Texture—silt loam or very fine sandy loam having thin strata of loam in some pedons; content of clay—8 to 18 percent

Reaction throughout the profile: Strongly alkaline or very strongly alkaline

Effervescence: Strongly effervescent to violently effervescent throughout the profile

Salt and sodium: Moderately or strongly saline-sodic affected in most pedons; not affected or slightly saline-sodic affected in the surface layer in some pedons

A horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—2 or 3

C horizon:
Value—6 or 7 dry, 4, 5, or 6 moist
Chroma—3 or 4
Other features—strata of loamy sand below a depth of 40 inches in some pedons; a horizon that has 5 to 15 percent lime concretions in the control section in some pedons; gypsum crystals in the lower part of the horizon in some pedons

Yobe Series

The Yobe series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in lacustrine sediments derived from mixed rock sources. Yobe soils are on alluvial flats and lake plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 5 inches, and the mean annual temperature is about 53 degrees F.

Taxonomic class: Fine-silty, mixed (calcareous), mesic Aeric Halaquepts

Typical pedon: Yobe silt loam, occasionally flooded, 0 to 2 percent slopes, in an area of Wendane-Yobe association:

A—0 to 3 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many very fine and fine vesicular pores; strongly effervescent; strongly alkaline (pH 8.8); abrupt smooth boundary. (0 to 4 inches thick)

C1—3 to 14 inches; light gray (10YR 7/2) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.8); clear smooth boundary. (6 to 15 inches thick)

C2—14 to 32 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (15 to 30 inches thick)

C3—32 to 52 inches; light gray (10YR 7/2) silty clay loam, light yellowish brown (10YR 6/4) moist; common fine distinct strong brown (7.5YR 5/8) mottles; moderate thin platy structure; slightly hard, friable, sticky and plastic; common fine tubular pores; very few lime nodules; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (10 to 30 inches thick)

Ck—52 to 60 inches; light gray (10YR 7/2) very fine sandy loam, yellowish brown (10YR 5/4) moist; common fine distinct strong brown (7.5YR 5/6) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine tubular pores; many medium irregularly shaped lime seams; 15 percent lime-silica nodules; slightly effervescent; strongly alkaline (pH 8.6).

Type location: Pershing County, Nevada; in Buffalo Valley, about 600 feet south and 2,200 feet west of the northeast corner of sec. 29, T. 29 N., R. 41 E.

Range in Characteristics

Soil moisture: A water table at a depth of 3 to 4 feet for 1 month or more in most years; the capillary fringe moistening the soil to within at least 30 inches of the surface

Soil temperature: 47 to 52 degrees F

Control section: Texture—stratified very fine sandy loam to silty clay loam; content of sand coarser than very fine sand—when mixed, less than 15 percent; content of clay—when mixed, 18 to 25 percent

Exchangeable sodium: Sodium adsorption ratio of more than 13, becoming less sodic with depth below a depth of 20 inches

Color throughout the profile: Hue of 10YR, 2.5Y, or 5Y; value of 6, 7, or 8 dry (4, 5, or 6 moist); and chroma of 2 or 3

Effervescence: Strongly effervescent or violently effervescent

Reaction: Strongly alkaline or very strongly alkaline in the A horizon and moderately alkaline or strongly alkaline in the C horizon

Other features: Very few to common lime nodules in most subhorizons

Yobe Variant

The Yobe Variant consists of very deep, very poorly drained, very slowly permeable soils that formed in lacustrine sediments. Yobe Variant soils are on lake plains. Slopes are 0 to 2 percent. The mean annual precipitation is about 6 inches, and the mean annual temperature is about 52 degrees F.

Taxonomic class: Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts

Typical pedon: Yobe Variant silty clay:

A1—0 to 2 inches; very pale brown (10YR 7/3) silty clay, yellowish brown (10YR 5/4) moist; strong thin platy structure; hard, friable, very sticky and very plastic; few fine and very fine roots; many very fine vesicular pores; violently effervescent; moderately alkaline (pH 8.4); clear smooth boundary. (0 to 4 inches thick)

A2—2 to 8 inches; pale brown (10YR 6/3) silty clay, yellowish brown (10YR 5/4) moist; moderate very thin platy structure; hard, friable, very sticky and very plastic; few very fine and fine roots; many very fine tubular pores; violently effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (0 to 7 inches thick)

Bk1—8 to 16 inches; pale brown (10YR 6/3) silty clay, yellowish brown (10YR 5/4) moist; few fine distinct strong brown (7.5YR 5/6) mottles; common fine dark yellowish brown (10YR 3/4) magnesium stains; massive; hard, friable, very sticky and very plastic; many fine and very fine roots; many fine tubular pores; violently effervescent; few fine soft masses of lime; moderately alkaline (pH 8.4); clear smooth boundary. (6 to 15 inches thick)

Bk2—16 to 24 inches; very pale brown (10YR 7/3) silty clay, brown (10YR 5/3) moist; few fine distinct strong brown (7.5YR 5/6) mottles; common fine dark yellowish brown (10YR 3/4) magnesium stains; weak thin platy structure; hard, firm, very sticky and very plastic; many fine and very fine roots; many fine and common medium tubular pores; strongly effervescent; many medium seams of lime; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 20 inches thick)

C1—24 to 32 inches; very pale brown (10YR 7/4) silty clay, yellowish brown (10YR 5/4) moist; many medium distinct strong brown (7.5YR 5/6) mottles; moderate thin platy structure; hard, firm, slightly sticky and plastic; common very fine and few fine roots; many very fine and common medium tubular pores; strongly effervescent; strongly alkaline (pH 8.6); clear smooth boundary. (6 to 20 inches thick)

C2—32 to 60 inches; very pale brown (10YR 7/4) silty clay, yellowish brown (10YR 5/4) moist; moderate thin platy structure; hard, firm, slightly sticky and plastic; many fine and common medium tubular pores; strongly effervescent; moderately alkaline (pH 8.2).

Type location: Pershing County, Nevada; in Buena Vista Valley, about 500 feet east and 500 feet south of the northwest corner of sec. 32, T. 29 N., R. 36 E.

Range in Characteristics

Soil moisture: A water table at a depth of 0.5 foot to 1.5 feet for 1 month or more in most years; the capillary fringe moistening the soils to the surface

Soil temperature: 47 to 52 degrees F

Reaction throughout the profile: Moderately alkaline or strongly alkaline

Content of clay in the control section: 40 to 60 percent

A horizon:

Value—6 to 8 dry, 5 or 6 moist
Chroma—2 to 4

Bk and C horizons:

Value—6 or 7 dry, 5 or 6 moist
Chroma—3 or 4

Formation of the Soils

Soil is a natural body on the earth's surface that is capable of supporting plants. It is a mixture of varying proportions of rocks, minerals, organic matter, water, and air. The rocks and minerals are fragmented and are partly or wholly weathered. Each soil has distinctive layers, or horizons, that are the product of environmental forces acting upon material deposited or accumulated through geologic activity.

Soils differ from one another in different localities and within short distances. Differences are the result of the interaction of five soil-forming factors. These factors are climate, mainly temperature and precipitation; relief, mainly as it affects internal and external soil properties, such as drainage, aeration, susceptibility to erosion, and exposure to sunlight and the wind; biological forces, mainly the plant cover and the organisms living in and on the soil; parent material, including its texture and structure and its mineralogical and chemical composition; and the length of time that the soil-forming factors have been acting on the soil material.

The landscape of the survey area is made up mainly of mountains and valleys that are the result of geologic stratigraphic and structural control *(9)*. The present topography and landforms, however, are primarily the result of events during Quaternary time. The kinds of soil that formed are indicative of the stability and age of the surfaces of the landforms on which the soils occur.

Climate

The climate of the survey area is characterized by warm, dry summers and cool, moist winters. The average annual precipitation ranges from about 6 inches at the lowest elevations of Buena Vista Valley and the lower reaches of the Humboldt River near Lovelock to 16 inches or more at the highest elevations in the Tobin Range to the east and the Humboldt Range to the west. The average annual air temperature ranges from about 52 degrees F at the lower elevations to about 41 degrees F or lower in some of the high mountain ranges. Major climatic variations are the result of the effects of topography and relief. Temperature decreases with increasing elevation. The amount of precipitation increases with increasing elevation. It is highest in the mountainous areas. The soils in the survey area reflect a general zonation with respect to elevation and longitudinal location.

At elevations of 3,900 to 5,000 feet in the survey area, the average annual precipitation is about 4 to 8 inches. In this arid part of the area, weathering of parent material is slow, leaching is incomplete, and eluviation and illuviation proceed at a very slow rate. The plant cover is sparse and consists mainly of drought- and salt-tolerant shrubs. Typically, the soils are low in organic matter content and have a thin, light colored A horizon. Soluble salts and calcium carbonate accumulate in the soils at a relatively shallow depth. Jerval soils and other Duric Natrargids, Weso soils and other Duric Camborthids, and Bubus soils and other Durorthidic Torriorthents reflect the type of soil formation in this climatic zone.

At the mid elevations in the survey area, the average annual precipitation is about 10 inches. This greater amount of precipitation results in deeper leaching of salts and calcium carbonate, decreased reaction, changes in the kind and density of vegetation, and a thicker, darker A horizon. Bliss soils and other Haploxerollic Durorthids, Enko and Orovada soils and other Durixerollic Camborthids, and Snapp soils and other Durixerollic Natrargids are typical of the soils that formed at these elevations.

At the highest elevations, which reach about 9,800 feet, the average annual precipitation is 12 to more than 16 inches. Leaching of salts and carbonates is more intensive than is typical at the lower elevations, and the soils are neutral or slightly acid and have a thick A horizon that is high in organic matter content. Iver soils and other Pachic Haploxerolls, Harcany soils and other Pachic Cryoborolls, and Tusel soils and other Argic Pachic Cryoborolls are typical of the soils that formed at these elevations.

In winter, freezing and thawing generally occur throughout the survey area, except for areas that generally are insulated by a snow cover. The effects of frost action include the heaving of plants, the development of miniature stone rings, and erosion of

the surface soil. At some of the higher elevations, freezing and thawing have fractured and displaced the bedrock.

Relief

Through its effects on drainage, runoff, erosion, and exposure to sunlight and the wind, relief has had an important effect on soil formation in the survey area. The mountain ranges, valleys, and flood plains reflect the gross variations in relief within the area.

The mountain ranges are characterized mainly by excessive relief. Runoff is rapid or very rapid, and the hazard of erosion is high. The removal of material by erosion inhibits or prevents soil formation. Soil formation on unstable mountain surfaces that are subject to a high rate of geologic erosion is limited primarily to the accumulation of organic matter, which results in the formation of a dark colored A horizon. A cambic horizon or an argillic horizon has formed in the soils on the more stable mountain surfaces, where the rate of geologic erosion has been slower. Millerlux soils and other Lithic Xerollic Haplargids and Golsum soils and other Aridic Calcic Argixerolls are examples of soils that formed on the more stable mountain slopes and have an argillic horizon. Wereld soils and other Aridic Calcixerolls are examples of soils that have a calcic horizon. Hopeka, Puffer, and Sumya soils and other Lithic Xeric Torriorthents are examples of soils on the less stable mountain slopes where soil formation has been unable to act on the parent material long enough for the development of a calcic or argillic horizon.

Concave and north-facing mountain slopes commonly have pockets where snow remains into late spring and early summer. The effect of temperature and moisture is enhanced in these areas, resulting in dense stands of shrubs and grass. The soils in these areas have a thick, dark colored A horizon that is high in content of organic matter. Iver soils and other Pachic Haploxerolls are examples.

The valleys in the survey area are largely semibolsons or bolsons *(16)* that receive drainage water primarily from the surrounding mountain ranges. They are characterized by a series of level or nearly level basin floors bordered by piedmont slopes consisting of alluvial fans, fan skirts, and fan piedmonts. The material in the valleys is Tertiary-Quaternary valley fill. Small playas or intermittent lakes are in Buena Vista Valley and Buffalo Valley.

In the Antelope Valley area, stream erosion has dissected parts of the valley fill. Downcutting of the valleys, which has been interrupted several times, is marked by the development of fan piedmonts. The dissection patterns in some of these areas have resulted in fan piedmont remnant summits and side slopes with inset fans and flood plains along drainageways. The fan piedmont areas have been relatively stable over a long period as a result of the bypassing of drainage water from hills and mountains through dissecting channels. Beoska soils and other Duric Natrargids, Cortez and Gwena soils and other Xerollic Nadurargids, and Bliss, Eastwell, and Shabliss soils and other Haploxerollic Durorthids are examples of soils on stable fan piedmonts. Enko and Orovada soils and other Durixerollic Camborthids and Humboldt soils and other Fluvaquentic Haplaquolls are examples of soils on inset fans and flood plains.

Associated with the valleys are low hills bordering the mountains. These hills are strongly dissected and consist of low hill crests and side slopes. Singatse soils and other Lithic Torriorthents and Theon soils and other Lithic Haplargids are examples of soils on the low hills.

Level and nearly level lake plains and alluvial flats in Buena Vista Valley are remnants of Pleistocene lakes or terminal points of drainageways. Runoff is slow, and drainage is somewhat restricted. The soils in these areas are light colored and contain soluble salts. Argenta and Wendane soils and other Aeric Halaquepts, Chumall soils and other Typic Torriorthents, and Batan soils and other Durorthidic Torriorthents are examples.

Nearly level soils on axial stream flood plains along the Humboldt River have a high water table. Runoff is very slow, and some of the soils are subject to flooding. These areas support dense stands of meadow vegetation, which has contributed a large amount of organic matter to the soils, resulting in a dark colored A horizon. Humboldt soils and other Fluvaquentic Haplaquolls are examples of the soils in these areas. In some areas where stream channels commonly are entrenched, the water table is at a greater depth.

Biological Forces

Plants, animals, insects, and microflora are important biological forces that affect soil formation in the survey area. Although animals, such as badgers and ground squirrels, and cicadas and other insects have had some effect on soil formation, plants appear to have been the major biological influence on the soils in the survey area.

The vegetation in the survey area has been particularly important because it reduces the hazard of erosion. It has helped to maintain the stability of the land surfaces so that normal soil formation could take place.

Because of climatic differences, plants vary considerably in kind and amount with differences in

elevation. On alluvial flats, lake plains, and fan piedmonts at low elevations, the main plants are drought- and salt-tolerant shrubs and grasses. Because of a scarcity of available moisture, plants cover only a small part of the surface. Therefore, very little organic matter is added to the soil and the scarcity of plants or litter provides little protection from the wind and sunlight. This condition is common in areas of Wendane soils and other Aeric Halaquepts and in areas of Bubus soils and other Durorthidic Torriorthents. Salt-tolerant shrubs tend to recycle salts from the deeper layers to the surface soil.

On the flood plains where drainage is restricted, the soils support dense meadow vegetation. This vegetation has supplied the organic matter that results in a thick, dark colored A horizon in Humboldt soils and other Fluvaquentic Haplaquolls.

The fan piedmonts and low hills at the higher elevations support a plant cover of shrubs and grasses that is transitional from desert shrubs. The density of the plants is somewhat greater than that in other areas, soluble salts are deeper in the soil profile, and the A horizon of the soils has accumulated slight or moderate amounts of organic matter, depending on the stability of the surface. Cortez and Gwena soils and other Xerollic Nadurargids and Burrita soils and other Lithic Xerollic Haplargids are examples of these soils.

The mountainous areas support denser stands of shrubs, grasses, and, in places, trees. Because of the more abundant vegetation, the A horizon in many of the soils, such as Harcany soils and other Pachic Cryoborolls, is thick, high in content of organic matter, and dark colored.

Parent Material

Parent material is the weathered rock or unconsolidated material in which soils form. The hardness, grain size, and porosity of the parent material and its mineralogical and chemical composition greatly influence soil formation. The main kinds of parent material in the survey area are residuum derived from intrusive and extrusive igneous rocks and sedimentary rocks, colluvium, alluvium, lacustrine sediments, and eolian material, including loess and volcanic ash. Minor amounts of metasedimentary and metavolcanic rocks are common in local areas.

The igneous rocks in parts of the East, Humboldt, Stillwater, Tobin, and West Humboldt Ranges include andesite, rhyolite, and granitic rocks. The more siliceous rocks, particularly tuff, are a source of silica, which helps to cement soil horizons. Volcanic rocks contain appreciable quantities of minerals that weather to clay. As a result, most of the soils that formed in material weathered from volcanic rocks and that are on sufficiently stable landforms for long periods have an argillic horizon. Alyan soils and other Aridic Argixerolls, Cleavage soils and other Lithic Argixerolls, Snowmore soils and other Xerollic Durargids, and Trunk soils and other Xerollic Haplargids are examples.

Colluvium has accumulated on steep mountain slopes as a result of gravitational forces. It generally is poorly sorted, contains many rock fragments, and has minerals that weather to clay. Many of the colluvial landscapes in the survey area have not been stable long enough for the development of an argillic horizon. Iver soils and other Pachic Haploxerolls are examples of soils in these colluvial areas.

Paleozoic and Mesozoic sedimentary and metasedimentary rocks dominate all of the mountain ranges in the survey area, including the Augusta Mountains and the East, Humboldt, Sonoma, Stillwater, Tobin, and West Humboldt Ranges. These rocks consist of relatively thick sequences of argillite, chert, shale, siltstone, sandstone, quartzite, conglomerate, dolomite, and limestone. The soils that formed in material weathered from these rocks include Polum soils and other Calcic Pachic Cryoborolls, which have a calcic horizon, and Hopeka, Kram, and Sumya soils and other Lithic Xeric Torriorthents, which are shallow, undeveloped soils on unstable land surfaces where an argillic horizon has not formed.

Late Tertiary and early Quaternary semiconsolidated, dissected deposits of gravel are mainly in the northern part of Buena Vista Valley, on the eastern side of Grass Valley, and in the northern part of the Humboldt Range, adjacent to the mountains. These deposits consist mainly of older alluvium made up of metasedimentary, igneous, and volcanic rocks in a matrix of tuff, sand, clay, and silt. Pocan soils and other Xerollic Camborthids, Chiara soils and other Xerollic Durorthids, and Knott soils and other Typic Nadurargids are examples of soils in areas of these deposits.

Alluvium deposited on piedmont slopes and basin floors consists of sandy, loamy, and clayey material of generally mixed mineralogy. This material has been eroded from the surrounding hills and mountains.

Alluvium derived from mixed rock sources on fan piedmonts, fan collars, fan aprons, and inset fans generally is loamy and contains pebbles, cobbles, and stones. It is porous and contains minerals that weather to clay and soluble silica, which helps to cement duripans. Cortez soils and other Xerollic Nadurargids and Cleaver soils and other Typic Durargids are examples of soils that are characterized by an argillic horizon and silica cementation and that formed on stable fan piedmonts. Whirlo soils and other Typic Camborthids are examples of soils that have a cambic

horizon and that formed on fan collars. Enko soils and other Durixerollic Camborthids are examples of soils that are characterized by a cambic horizon and weak silica cementation and that formed on fan aprons.

Alluvium deposited on fan skirts, alluvial flats, and flood plains below the fan piedmonts consists of sandy, loamy, silty, and clayey material. Soluble salts are common in some of the soils in these areas. Although the alluvium contains weatherable minerals, the soils on these landforms are young and do not exhibit evidence of soil formation. Preble soils and other Aquic Durorthidic Torriorthents, Wendane soils and other Aeric Halaquepts, and Humboldt soils and other Fluvaquentic Haplaquolls are examples.

Volcanic ash presumed to be derived from Mount Mazama ash falls has been a source of silica, which has been instrumental in the formation of durinodes and duripans in the soils of the survey area. The ash has been preserved in some of the soils on fan skirts, inset fans, and alluvial flats and on flood plains, such as those along the Humboldt River. It occurs as thin strata. Dun Glen soils and other Typic Camborthids on fans skirts and Wendane soils and other Aeric Halaquepts on alluvial flats and lake plains are examples of soils influenced by volcanic ash.

Loess consisting mainly of silt was deposited over the entire survey area during the late Pleistocene and the Holocene. This material originated in the dry lake basins west of the survey area. Much of the loess was deposited on mountain slopes and was subsequently redeposited by water in the valleys as silt loam and very fine sandy loam alluvium. The influence of loess is apparent in the upper horizons in most of the soils that formed on fan piedmont remnants, fan collars, fan skirts, and inset fans. Examples are Beoska and Oxcorel soils and other Duric Natrargids on fan piedmont remnants and Whirlo and Wholan soils and other Typic Camborthids on inset fans, fan collars, and fan skirts.

Sandy eolian material is of limited extent in the survey area. It is mainly adjacent to Rye Patch Reservoir and in Buena Vista Valley. Sandy soils, such as Hawsley soils and other Typic Torripsamments, formed on low, stabilized dunes and sand sheets associated with beach terraces. Isolde soils and other Typic Torripsamments are in wind-active areas of semistabilized dunes superimposed over beach terraces.

Time

Time is required for the formation of soil horizons. The amount of time required depends on the other soil-forming factors. The thickness and other characteristics of A, B, and other horizons reflect the relative age of the soils. The age or degree of expression of the soil horizons reflects the amount of the weathering of parent material resulting from the interaction of moisture, temperature, and biological activity as influenced by time.

The soils in this survey area range from a few years to tens of thousands of years old. This range in age is a major reason for the many kinds of soil in the area.

The interrelationships between time and the other soil-forming factors are not well understood by soil scientists and geologists working in this field. Many soil scientists and some geologists think that weathering of parent material and soil profile development have been essentially continuous and that their rates have changed little throughout the Quaternary *(14, 15, 18, 23)*. Recently, geologists differentiating Quarternary deposits have proposed that soil formation has not proceeded continuously at the same rate but has taken place intermittently at rapid rates *(11, 12, 13, 17)*. These geologists have developed a technique of mapping soil stratigraphic units in which weathering profiles are used as stratigraphic markers to differentiate and correlate Quarternary deposits. The concept of soil formation is based on the assumption that weathering profiles formed in response to infrequent combinations of climatic factors that induced minimal erosion and deposition and a greatly accelerated rate of chemical weathering.

Although there are disagreements about the relative influence of time and other soil-forming factors, the concept of the intermittency of soil formation has been supported by numerous studies and provides a practical technique to discuss the age of the soils in this survey area in terms of geologic and climatic factors in the Quaternary. The time-stratigraphic names used in this discussion are those of Birkeland *(3)*. They are Holocene (0 to 10,000 years ago), Late Wisconsin (10,000 to 30,000 years ago), Middle Wisconsin (30,000 to 40,000 years ago), Early Wisconsin (40,000 to 130,000 years ago), and pre-Wisconsin (130,000 or more years ago).

The kinds of diagnostic subsurface horizons and other diagnostic subsurface properties *(20)*, together with their strength of expression, provide general clues to the age of the soils in the survey area. The important diagnostic subsurface horizons of the soils in the area are the argillic, natric, and cambic horizons and horizons exhibiting silica cementation.

Prominent argillic horizons in this survey area are generally only in soils that formed primarily during Wisconsin and pre-Wisconsin time. This concept has been established by studies in the Southwest *(5, 6)* and is further supported in "Soil Taxonomy" *(20)*. If soil-

forming conditions remain constant, argillic horizons become finer in texture with increasing age, become somewhat thicker, and tend to develop abrupt upper boundaries. Weakly expressed, thin argillic horizons may have formed during Late Wisconsin or Early Holocene time.

Natric horizons are special kinds of argillic horizons that formed under the influence of a high content of exchangeable sodium. The effect of sodium on the dispersion of clay may tend to accelerate the rate at which argillic horizons form. This acceleration is believed to be significant only in weakly expressed natric horizons that formed on Holocene surfaces. Following the formation of argillic horizons, prominent natric horizons may have developed their present characteristics as a result of sodium supplied by the deposition of eolian material. This important present-day process affects the physical and chemical properties of the soils in the survey area.

The volcanic glass in sediment derived from pyroclastic material and in alluvial and eolian deposits of volcanic ash is a source of silica, which is important in the formation of duripans and durinodes in many of the soils in the survey area. Duripans are massive or platy horizons that are cemented with silica and in most areas with accessory carbonates. Because of their association with prominent argillic horizons, massive duripans capped with silica- and lime-cemented laminar layers are assumed to be the oldest duripans in the survey area. They are of pre-Wisconsin age. Thin duripans that are not characterized by overlying laminar layers or by weak, discontinuous silica cementation or durinodes have apparently developed on Holocene surfaces, in areas of loess or loamy alluvium generally deposited on gravelly material. These kinds of silica cementation apparently can occur during a relatively short period and are probably less than 7,000 years old.

The degree of development of diagnostic subsurface horizons in the soils of the area indicates a sequence that ranges in age from late Holocene to pre-Wisconsin.

The youngest soils in the survey area are those that formed in recently aggraded material or in material that has been recently exposed by erosion. Among these are Mazuma soils and other Typic Torriorthents, Needle Peak soils and other Aquic Torriorthents, and Sonoma soils and other Aeric Fluvaquents, all of which formed in recent alluvium; Daick soils and other shallow Typic Torriorthents, which formed in Tertiary sediments on low hills where geologic erosion has been active; and Isolde soils and other Typic Torripsamments, which are subject to eolian activity on semistabilized sand dunes.

Soils that formed in alluvium on wet flood plains and on recently eroded mountain slopes are somewhat older than the youngest soils. The older soils have been stable long enough for the accumulation of organic matter and the formation of a dark colored A horizon. They do not have an argillic, natric, cambic, or calcic horizon, a duripan, or durinodes. They are probably less than 1,000 years old. Humboldt soils and other Fluvaquentic Haplaquolls are examples of soils that formed on wet flood plains. Linrose soils and other Aridic Haploxerolls and Harcany soils and other Pachic Cryoborolls are examples of soils that formed on mountain slopes.

Soils that formed in alluvium on alluvial flats and that have subsurface horizons containing durinodes or horizons characterized by very weak silica cementation are older than the youngest soils and may be slightly older than the soils that have a dark colored A horizon as their only diagnostic feature. The soils on the alluvial flats formed in salt- and sodium-affected parent material containing appreciable amounts of volcanic ash. The volcanic ash, which is a source of soluble silica, and alkaline soil reaction probably contribute to relatively rapid formation of durinodes and incipient silica cementation. Preble soils and other Aquic Durorthidic Torriorthents and Wendane soils and other Aeric Halaquepts are examples of soils that have horizons characterized by incipient silica cementation.

Stable Holocene surfaces less than about 10,000 years old and more than 2,000 years old are extensive in the survey area. The soils that formed on these surfaces have a cambic horizon. Most of the cambic horizons in the soils of the survey area formed in calcareous alluvium. The original stratification is not evident, and carbonates have been removed and redeposited in the underlying horizons.

Investigations in southern New Mexico indicate that cambic horizons in that region are less than about 5,000 years old *(4, 7)*. Cambic horizons in this survey area and in other areas in Nevada generally have been thought to be less than 10,000 years old and possibly less than 7,000 years old. This age has been determined mainly through soil mapping in areas below the last high stage of Pleistocene Lake Lahontan *(8, 11, 12, 13)*. Examples of soils that have a cambic horizon are Toulon soils and other Typic Camborthids on barrier and offshore bars; Enko and Orovada soils and other Durixerollic Camborthids on inset fans, fan aprons, and fan skirts; and Pocan soils and other Xerollic Camborthids on the side slopes of mountains.

In some of the less stable areas, the landscape was stripped by erosion during Late Wisconsin time and relict duripans were exposed. Following redeposition during the middle and early Holocene, loess and loamy alluvium derived from the surrounding land surfaces covered these relict subsurface horizons to a shallow depth. Soil formation in the surface alluvium is minimal.

Examples of soils that have a duripan are Adelaide soils and other Entic Durorthids, Sodhouse soils and other Typic Durorthids, and Chiara soils and other Xerollic Durorthids, all of which are on fan piedmont remnants.

Soils that have a relict argillic horizon are believed to be of Late Wisconsin to pre-Wisconsin age. They are extensive on mountains, hills, and fan piedmonts. The current extent of these soils is evidence that major erosional and depositional events have not taken place or have been minor in extent since late Pleistocene time.

Stable Early, Middle, or Late Wisconsin surfaces are extensive in the survey area. The soils on these surfaces have a dominantly fine-loamy or loamy-skeletal argillic or natric horizon. Biddleman soils and other Typic Natrargids are examples of soils that have a natric horizon and are on beach terraces. Woolsey soils and other Typic Haplargids are examples of soils that have an argillic horizon and are on fan piedmonts. Beoska soils and other Duric Natrargids are examples of soils that have a natric horizon and are on fan piedmonts. Burrita soils and other Lithic Xerollic Haplargids are examples of soils that have an argillic horizon and are on the side slopes of hills and mountains. Alyan soils and other Aridic Argixerolls are examples of soils that have an argillic horizon and are on plateaus. Reluctan soils and other Aridic Argixerolls are examples of soils that have an argillic horizon and are on the side slopes of mountains.

A thin or moderately thick duripan formed in some of the soils that have an argillic or natric horizon and are on the older landscapes in the survey area. Examples are Dewar soils and other Xerollic Durargids on fan piedmonts, Tenabo soils and other Typic Nadurargids on fan piedmonts, and Pirouette soils and other Typic Nadurargids on plateaus. The duripan in the Pirouette soils is underlain by bedrock.

The soils on stable Early Wisconsin or Early and Middle Wisconsin surfaces have a well developed, fine textured argillic or natric horizon. They are on the older surfaces where the original subsurface horizons have not been stripped by erosion or deeply buried by recent alluvium. Examples are Chilper and Oxcorel soils and other Duric Natrargids and Cortez soils and other Xerollic Nadurargids on fan piedmonts and Gosumi soils and other Aridic Argixerolls and Ninemile soils and other Lithic Argixerolls on mountain slopes and plateaus.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted. (See Sodicity.)

Alluvial fan. A semiconical, or fan-shaped, constructional major landform that is mainly stratified alluvium with debris flow deposits in some areas. It is on the upper margin of a piedmont slope, and its apex is a source of alluvium debouching from a mountain valley into an intermontane basin. Also, a generic term for similar landforms in various other landscape positions.

Alluvial flat. The nearly level alluvial surface between a piedmont slope and the playa of a bolson or the axial stream flood plain of a semibolson. This landform can include both recent and relict components.

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.

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.

Back slope. The slope component that is the steepest, straight to concave or merely concave, middle portion of an erosional slope.

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.

Ballena. A major landform comprising distinctively round-topped ridgeline remnants of fan alluvium. The broadly rounded shoulders of the ridge meet from either side to form a narrow crest and merge smoothly with the concave back slopes. In ideal examples, the slightly concave foot slopes of adjacent ballenas merge to form a smoothly rounded drainageway.

Bar (offshore and barrier). A component landform comprised of elongated, commonly curving, low ridges of well sorted sand and gravel that stand above the general level of a bolson floor. It is the result of the wave action of a Pleistocene lake.

Basal area. The area of a cross section of a tree. It is a measure of stand density, commonly expressed in square feet. For pinyon pine and juniper stands, it is the section at a height of 1 foot and measured outside the bark.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Basin. A general term for an intermontane basin, a bolson, a semibolson, an area of centripetal drainage, or a structural depressional area.

Basin floor. The lowermost, nearly level major physiographic part of a bolson or semibolson. It includes all alluvial, eolian, and erosional landforms that are below the piedmont slopes.

Basin floor remnant. A generally flat-topped erosional remnant of a basin floor that has been dissected by an axial stream.

Beach plain. A major landform of bolson floors comprised of numerous closely spaced offshore

bars and intervening lagoons. It is the result of a receding Pleistocene lake.

Beach terrace. A component landform occurring on the lower piedmont slope and consisting of a wave-cut scarp and a wave-built terrace of well sorted sand and gravel marking a stillstand of a Pleistocene lake.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bolson. An internally drained intermontane basin.

Bolson floor. See Basin floor.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Channel. The bed of a single or braided waterway that commonly is barren of vegetation. Channels form in young alluvium. They may be enclosed by banks, or they may be splayed across a fan surface and slightly mounded above it. They may include bars and dumps of cobbles and stones. Nearly all channels, except for flood plain playas, are landform elements.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

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.

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 contains a specified amount of rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Terms for the amount of these fragments, by percentage of the total volume, are as follows:

Cobbly	15 to 35 percent
Very cobbly	35 to 60 percent
Extremely cobbly	more than 60 percent

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Component landform. A feature of the earth's surface that is part of a major landform and was created by partial dissection of the major landform or by alluvial or eolian accretion. A component landform is the smallest type of landform that can be described as a single unit. Its morphological parts are called landform elements. A side slope element can be subdivided into slope components.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, 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.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

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.

Crest. The slope component comprising a very narrow, commonly linear top of an erosional ridge, hill, mountain, or other landform.

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.

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.

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediment or that remains after finer particles have been removed by running water or the wind.

Desert varnish. A glossy sheen or coating on stones and gravel in arid regions.

Dissection. The partial destruction of a land surface or landform by gully, arroyo, canyon, or valley cutting, leaving flattish remnants or ridges, hills, or mountains separated by drainageways.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—These soils have very high and high hydraulic conductivity and a low water-holding capacity. They are not suited to crop production unless irrigated.
Somewhat excessively drained.—These soils have high hydraulic conductivity and a low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.
Well drained.—These soils have an intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.
Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless a drainage system is installed. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.
Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless a drainage system is installed. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.
Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.
Very poorly drained.—These soils are wet to the surface most of the time. The wetness prevents the growth of important crops (except for rice) unless a drainage system is installed.

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Effervescence. A soil quality measured when drops of diluted (1:10) hydrochloric acid (HCl) are added to the soil. The degrees of effervescence 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.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

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.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fan apron. A component landform consisting of a sheetlike mantle of relatively young alluvium that partially covers the surface of an older fan piedmont or, in places, an alluvial fan. A fan apron buries a pedogenic soil.

Fan collar. A component landform comprised of a thin, short, relatively young mantle of alluvium along the very upper margin of a major alluvial fan at a mountain front. The mantle somewhere buries a pedogenic soil that can be traced to the edge of the fan collar, where it emerges as the land surface, or relict soil.

Fan piedmont. The most extensive major landform of most piedmont slopes. It is formed by the lateral coalescence of mountain-front alluvial fans into one generally smooth slope and by accretion of fan aprons. Fan piedmonts commonly are complexes of many component landforms.

Fan remnant. A generic term for a component landform that is the remainder of various older fans that have been dissected (erosional fan remnants) or partially buried (nonburied fan remnants). Erosional fan remnants have a flattish summit that consists of a relict fan surface; nonburied fan remnants consist entirely of a relict fan surface. Fan remnants can be specifically identified by such terms as fan piedmont remnants, fan skirt remnants, and inset fan remnants.

Fan remnant side slope. A landform element comprised of the relatively young erosional slope around the sides of an erosional fan remnant. It is composed of shoulders, back slopes, and foot slopes.

Fan skirt. A major landform comprised of laterally coalescing, small alluvial fans that originate from gullies that are cut into or extend from inset fans of a fan piedmont and merge along their toe slopes with the basin floor. Fan skirts are smooth or only slightly dissected.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. The transversely level floor of an axial stream of a semibolson or of a major desert stream valley that is occasionally or regularly alluviated when the stream overflows its channel during periods of flooding.

Flood plain playa. A component landform consisting of very low gradient, barren, axial stream segments in an intermontane basin. It is subject to broad and shallow floods and is veneered with barren, fine textured sediment that crusts. A flood plain playa commonly is segmented by transverse, narrow

bands of vegetation, and it may alternate with ordinary, narrow or braided channel segments.

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 relatively gently sloping, slightly concave slope component of an erosional slope that is at the base of the back slope component. Synonym: pediment.

Forb. Any herbaceous plant not a grass or a sedge.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

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 contains a specified amount of rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter. Terms for the amount of these fragments, expressed as a percentage of the total volume, are as follows:

Gravelly	15 to 35 percent
Very gravelly	35 to 60 percent
Extremely gravelly	more than 60 percent

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 silica or calcium carbonate.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic number, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors of predicting runoff. The four hydrologic groups are:

Group A.—Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B.—Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C.—Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D.—Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

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.

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.

Inset fan. The flood plain of a commonly ephemeral stream that is confined between fan remnants, basin floor remnants, ballenas, or closely opposed fan toe slopes. Its transversely level cross section is evidence of alluviation of a fluve. It is wide enough that raw channels cover only a fraction of its surface.

Interfluve. The elevated area between two fluves (drainageways) that sheds water to them.

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.

Irrigation. Application of water to soils to assist in production of crops.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lagoon. A metaphorical term for the ponding area behind Pleistocene offshore or barrier bars (beaches) that collects fine textured sediments.

Lake plain. A major landform of some bolson floors that is nearly level and consists of fine textured, stratified bottom sediment of a Pleistocene lake.

Lake plain terrace. A somewhat elevated area and component landform of a lake plain.

Landform element. The morphological part of a component landform. Side slope landform elements may be divided into slope components.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Major landform. A subdivision of the piedmont slope or basin floor that reflects a major morphogenetic process taking place over a long period or that is the result of a special erosional or depositional process. Many major landforms are dissected, and their original area is occupied by component landforms.

Major physiographic part. The very large part of an intermontane basin that is characterized by dominant slope and position and is comprised of major landforms (i.e., steeply sloping mountains that stand above less sloping piedmonts that in turn grade to nearly level basin floors).

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along

the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau), and generally having steep sides and a surface of considerably bare rock. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Mountain valley fan. A major landform that is the result of alluvial filling of a mountain valley or intramontane basin by coalescent valley side slope fans, the toe slopes of which meet from either side of the valley along an axial drainageway. It is an extension of the upper piedmont slope into mountain valleys. Most mountain valley fans have been dissected.

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 between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan* and *claypan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Parna dune. An eolian dune made up of sand-sized aggregates of clayey material that commonly occurs leeward of a playa.

Partial ballena. A spur that has a fully rounded crest and that is connected to an erosional fan remnant large enough that some relict fan surface is preserved on the remnant summit.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pediment. The foot slope component of an erosional slope.

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.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piedmont. A general slope rising to mountains.

Piedmont slope. A major physiographic part of an intermontane basin that comprises all of the constructional and erosional major and component landforms from the basin floor to the mountain front and on into alluvium-filled mountain valleys.

Piping. Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plain. A flat, undulating, or rolling area, large or small, that includes few prominent hills or valleys. It generally is at a low elevation in relation to surrounding areas, and it may have considerable overall slope and local relief.

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. An ephemerally flooded, barren area on a basin floor that is veneered with fine textured sediment and acts as a temporary or final sink for drainage water.

Ponding. Standing water on soils in closed depressions. Unless a drainage system is

installed, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

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. The application of fire to land under such conditions of weather, soil moisture, and time of day as presumably will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

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.

Remnant. The remainder of a larger landform or of a land surface that has been dissected or partially buried.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Ridgeline remnant. A narrow ridge that has a fully rounded crest and is accordant with the crests of similar nearby ridges. Together, the accordant crests approximately mark the position of a preexisting land surface that has been destroyed by dissection.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water. Six classes of runoff are recognized:

Ponded.—Little of the precipitation and run-on 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 soils, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs in level or 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 soils. Most of the water

passes through the soils, 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 soils rapidly. Most of the water passes through the soils, is used by plants, or evaporates. The soils commonly are nearly level or very gently sloping, or they are steeper but absorb precipitation very rapidly.
Medium.—Surface water flows away quickly enough that free water stands on the surface for only short periods. Part of the precipitation enters the soils and is used by plants, is lost through evaporation, or moves into underground channels. The soils commonly are 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 quickly 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 soils. The soils generally are moderately steep or steep, and they absorb precipitation at a moderate or slow rate.
Very rapid.—Surface water flows away so quickly that the period of concentration is very brief and free water does not stand on the surface. Only a small part of the water enters the soils. The soils generally are steep or very steep, and they absorb precipitation slowly.

Run-on. Soil moisture received as runoff from adjacent areas.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium. The conductivity of extract, in millimhos per centimeter, is expressed as:

Nonsaline	0 to 4
Slightly saline	4 to 8
Moderately saline	8 to 16
Strongly saline	more than 16

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.

Sand dune. A component landform made up of eolian, sand-sized mineral particles. Dunes commonly are on the leeward side of a Pleistocene lakebed.

Sand sheet. A major landform comprising an extensive layer of eolian sand from pluvial lake beaches, sometimes partly redeposited by water. The layer of sand is several feet thick. It is spread across alluvial flats, onto piedmont slopes, or over low mountains and has an undulating and commonly duned surface.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Semibolson. An externally drained intermontane basin.

Semibolson floor. See Basin floor.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shoulder. The convex slope component at the top of an erosional side slope.

Side slope. The erosional slope around the sides of an erosional fan remnant, hill, ballena, mountain, or other landform. It consists of shoulders, back slopes, foot slopes, and toe slopes. Also, the planimetrically linear parts of the slopes around a digitately dissected fan remnant, hill, or other landform, as compared with the planimetrically convex nose slopes and concave head slopes.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site. For pinyon pine and juniper stands, it is based on tree diameter at a height of 1 foot and the spacing between trees.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a

drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

Nearly level	0 to 2 percent
Gently sloping	2 to 4 percent
Moderately sloping	4 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 30 percent
Steep	30 to 50 percent
Very steep	50 to 75 percent
Extremely steep	more than 75 percent

Slope component. A morphological element of an erosional slope and a morphological subdivision of the side slope landform element.

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:

Nonsodic	less than 13:1
Slightly sodic	13-23:1
Moderately sodic	24-46:1
Strongly sodic	more than 46:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony soil material. Material, commonly in a subsurface layer, that contains a specified amount of rock fragments that are mainly 10 to 24 inches in diameter. Terms for the amount of these fragments, by percentage of the total volume, are as follows:

Stony	15 to 35 percent
Very stony	35 to 60 percent
Extremely stony	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 and is underlain by well-sorted, stratified sand and gravel or by loamy or clayey sediment.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Summit. The flattish top of an erosional fan remnant, hill, mountain, or other landform. The term is used for both a landform element and a slope component.

Tailwater. In hydraulics, the water directly downstream from a dam or similar structure.

Talus. Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep, rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

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.

Terrace. Any part of a general slope that stands above a short, steep scarp and has a nearly level or gently sloping summit. It may have another short scarp above the summit. Synonym: bench.

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."

Toe slope. The lowest part of a foot slope component of an erosional slope. It is distinguished from the upper part of a foot slope by a greater accumulation of pedisediment. Also, the lowest and most gently sloping part of a slope.

Tufa. A chemical sedimentary rock composed of calcium carbonate or silica. It is deposited from solution in the water of a spring or lake.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Valley. An elongated depressional area cut by stream erosion and the associated water erosion of its side slopes (stream valley). The term also is used to describe an intermontane basin.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water-supplying capacity. Refers to the amount of water available in the soil for plant growth in a normal year from the total of precipitation, run-on, and a capillary fringe minus runoff.

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 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.

Appendix

Criteria Used in Rating Soils for Selected Uses

Daily Cover for Landfill

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches)	>60	40-60	<40	Depth to rock.
3. Depth to cemented pan (inches)	>60	40-60	<40	Cemented pan.
4. Unified [1]	---	---	SP, SW, SP-SM, SW-SM, GP, GW, GP-GM, GW-GM	Seepage.
5. USDA texture [1 2 3]	---	CL, SICL, SC	SIC, C	Too clayey.
6. USDA texture [1]	---	LCOS, LS, LFS, VFS	S, FS, COS, SG	Too sandy.
7. Unified [1 2]	---	---	OL, OH, CH, MH	Hard to pack.
8. Coarse fragments (percent) [1 4]	<25	25-50	>50	Small stones.
9. Fraction greater than 3 inches (percent by weight) [1 4]	<25	25-50	>50	Large stones.
10. Slope (percent)	<8	8-15	>15	Slope.
11. Depth to high water table (feet)	--- >3.5	--- 1.5-3.5	+ <1.5	Ponding. Wetness.
12. Unified [1]	---	---	PT	Excess humus.
13. Layer thickness (inches)	>60	40-60	<40	Thin layer.
14. Soil reaction (pH) [1]	---	---	<3.6	Too acid.
15. Salinity in the upper 60 inches (mmhos/cm) [3]	---	---	>16	Excess salt.
16. Sodium adsorption ratio (great group) [1 3]	---	---	>12 (halic, natric, alkali phases)	Excess sodium.
17. Carbonates	---	---	(5)	Excess lime.

[1] Thickest layer between 10 and 60 inches.

[2] If in kaolinitic family, rate one class better if experience confirms.

[3] Disregard in all Aridisols except Salorthids and Aquic subgroups and all Torri great groups of Entisols except Aquic subgroups.

[4] Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.

[5] If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. Moisture regime	Aquic, xeric, ustic, and xeric and ustic bordering on aridic or torric.	Aridic and torric bordering on aquic, xeric, or ustic.	Aridic and torric.	Too arid.
2. Effective moisture [1]	>10 in. (25 cm)	7-10 in. (17.5-25 cm)	<7 in. (17.5 cm)	Too arid.
3. Available water capacity	Surface 10 in. (27 cm) >1.25 in. (3.2 cm). Soil profile > 4 in. (10.2 cm).	Surface 10 in. (25 cm) 0.75-1.25 in. (1.9-3.2 cm). Soil profile 2.5-4 in. (6.4-10.2 cm).	Surface 10 in. (25 cm) <0.75 in. (1.9 cm). Soil profile < 2-5 in. (6.4 cm).	Droughty.
4. Texture surface 7 in. (17.5 cm)	LVFS, COSL, SL, FSL, VFSL, L SIL, SCL, and CL SICL with <35% C.	VFS, LFS, SC, SIC, C, and CL and SICL with >35% C.	LS, LCOS, FS, COS.	Too sandy. Too clayey.
5. Rock fragments in surface 7 in. (17.5 cm)	GR <35%; CB <15%; ST <3%. Total rock fragments <35%.	GR <35%; CB 15-35%; ST 3-15%. Total rock fragments <35%.	GR >35%; CB 35%; ST >15%. Total rock fragments >35%.	Small stones. Large stones.
6. Depth to abrupt A-B texture boundary [2]	>10 in. (25 cm)	>10 in. (25 cm)	<10 in. (25 cm)	Rooting depth.
7. Depth to bedrock or hardpan	>20 in. (50 cm)	10-20 in. (25-50 cm)	<10 in. (25 cm)	Depth to rock/pan.
8. Electrical conductivity-saturation extract-25 °C	<2 mmhos/cm (0.2 s/m) in upper 20 in. (50 cm).	2-4 mmhos/cm (0.2-0.4 s/m) in upper 10 in. (25 cm) and 4-8 mmhos/cm (0.4-0.8 s/m) in 10-20 in. (25-50 cm).	>4 mmhos/cm (0.4 s/m) in upper 10 in. (25 cm) and/or >8 mmhos/cm (0.8 s/m) in 10-20 in. (25-50 cm).	Excess salt.
9. Sodium adsorption ratio	<8 in upper 20 in. (50 cm).	8-13 in upper 10 in. (25 cm) and <20 in 10-20 in. (25-50 cm).	>13 in upper 10 in. (25 cm) and/or >20 in 10-20 in. (25-50 cm).	Excess sodium.
10. K x percent slope [3]	<4 [4]; <6 [5]	4-6 [4]; 6-8 [5]	>6 [4]; >8 [5]	Erodes easily.
11. I x C [6]	<60	<60	>60	Soil blowing.
12. Soil surface morphological types [7]	Types I and II >60%; type IV <5%; or with mollic epipedon [8]	Types I and II 20-60%; type IV <10% [8]	Type III <60%; type IV >10% [8]	Too crusty.

[1] Moisture from precipitation, run-on, and ground water budgeted to actual evapotranspiration.
[2] Rate Vertisols and Vertic subgroups as poor.
[3] Sheet and rill erosion hazard (bare soil).
[4] For ustic bordering on aridic or torric and for aridic or torric bordering on ustic moisture regimes.
[5] For xeric, xeric bordering on aridic or torric, and aridic or torric bordering on xeric moisture regimes.
[6] Wind erosion hazard (bare soil).
[7] See: (a) Final Report. Properties, Occurrence and Management of Soils with Vesicular Surface Horizons. 1977. Contract No. 52500-CT 5(N). USDI-BLM and UNR-Ag. Exp. Stn. Eckert, Peterson, Wood, and Blackburn; and (b) Final Report. The Role of Soil-Surface Morphology in the Function of Semiarid Rangelands. 1989. Contract No. TB-89-01 UNR-Ag. Exp. Stn. Eckert, Peterson, Wood, Blackburn, and Stephens.
[8] Soils without crusting morphology are to be included in types I and II for rating.

Shallow Excavations

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches):				
Hard	>60	40-60	<40	Depth to rock.
Soft	>40	20-40	<20	Depth to rock.
3. Depth to cemented pan (inches):				
Thick	>60	40-60	<40	Cemented pan.
Thin	>40	20-40	<20	Cemented pan.
4. USDA texture (20 to 60 inches)	---	SI [1]	COS, S, FS, VFS, LCOS, LS, LFS, LVFS, G, SG	Cutbanks cave.
5. USDA texture (20 to 60 inches)	---	C, SIC	---	Too clayey.
6. Soil order	---	---	Vertisols	Cutbanks cave.
7. Bulk density (g/cc)	---	>1.8	---	Dense layer.
8. Unified (20 to 60 inches)	---	---	OL, OH, PT	Excess humus.
9. Fraction greater than 3 inches (percent by weight) [2]	<25	25-50	>50	Large stones.
10. Depth to high water table (feet)	---	---	+	Ponding.
	>6	2.5-6	0-2.5	Wetness.
11. Flooding	None, rare, protected.	Common	---	Flooding.
12. Slope (percent)	0-8	8-15	>15	Slope.

[1] In areas of loess, rating should be *slight.*
[2] Weighted average to 40 inches.

Local Roads and Streets

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Total subsidence	---	---	>12	Subsides.
3. Depth to bedrock (inches):				
Hard	>40	20-40	<20	Depth to rock.
Soft	>20	<20	---	Depth to rock.
4. Depth to cemented pan (inches):				
Thick	>40	20-40	<20	Cemented pan.
Thin	>20	<20	---	Cemented pan.
5. Shrink-swell potential [1]	Low	Moderate	High, very high	Shrink-swell.
6. AASHTO group index number [1 2 3]	0-4	5-8	>8	Low strength.
7. Depth to high water table (feet)	---	---	+	Ponding.
	>2.5	1.0-2.5	<1.0	Wetness.
8. Slope (percent)	<8	8-15	>15	Slope.
9. Flooding	None	Rare	Common	Flooding.
10. Potential frost action	Low	Moderate	High	Frost action.
11. Fraction greater than 3 inches (percent by weight) [4]	<25	25-50	>50	Large stones.
12. Downslope movement	---	---	([5])	Slippage.
13. Formation of pits	---	---	([6])	Pitting.
14. Differential settling	---	---	([7])	Unstable fill.

[1] Thickest layer between 10 and 40 inches.

[2] GIN = (F-35)[.2 + .005(LL-40)] + .01 (F-15)(PI-10) where F = percent passing No. 200 sieve. If F is <35 and PI is >11, use only part 2 of equation. Use median values.

[3] If in kaolinitic family, rate one class better if experience confirms.

[4] Weighted average to 40 inches.

[5] If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."

[6] If the soil is susceptible to the formation of pits caused by the melting of ground ice when the ground cover is removed, rate "Severe—pitting."

[7] If the soil is susceptible to differential settling, rate "Severe—unstable fill."

Roadfill

Property [1]	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches)	>60	40-60	<40	Depth to rock.
3. Depth to cemented pan (thick) (inches)	>60	40-60	<40	Cemented pan.
4. Shrink-swell potential [2]	Low	Moderate	High, very high	Shrink-swell.
5. AASHTO group index number [2 3 4]	0-4	5-8	>8	Low strength.
6. Layer thickness (inches)	>60	30-60	<30	Thin layer.
7. Fraction greater than 3 inches (percent by weight) [5]	<25	25-50	>50	Large stones.
8. Depth to high water table (feet)	>3	1-3	<1	Wetness.
9. Slope (percent)	0-15	15-25	>25	Slope.

[1] If the content of gypsum is 10 to 15 percent, rate "Fair—excess gypsum." If it exceeds 15 percent, rate "Poor—excess gypsum."

[2] Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

[3] GIN = (F-35)[.2 + .005(LL-40)] + .01 (F-15)(PI-10) where F = percent passing No. 200 sieve. If F is <35 and PI is >11, use only part 2 of equation. Use median values.

[4] If in kaolinitic family, rate one class better if experience confirms.

[5] Weighted average to 40 inches.

Sand

Property	Limits		Restrictive feature
	Probable source	Improbable source	
1. USDA texture	---	Ice	Permafrost.
2. Unified [1]	SW, SP, SW-SM, SP-SM	---	---
	GW, GP, GW-GM, GP-GM [2]	---	---
	---	GW, GP, GW-GM, GP-GM [3]	Small stones.
	---	PT	Excess humus.
	---	All other	Excess fines.
3. Layer thickness (inches)	---	<36	Thin layer.
	>36	---	---
4. Fraction greater than 3 inches (percent by weight) [4]	---	>50	Large stones.
	<50	---	---

[1] Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

[2] Percent passing No. 4 sieve minus percent passing No. 200 sieve is greater than 25.

[3] Percent passing No. 4 sieve minus percent passing No. 200 sieve is less than 25.

[4] Thickest layer between 10 and 60 inches.

Gravel

Property	Limits		Restrictive feature
	Probable source	Improbable source	
1. USDA texture	---	Ice	Permafrost.
2. Unified [1]	GW, GP, GW-GM, GP-GM	---	---
	SW, SP, SW-SM, SP-SM [2]	SW, SP, SW-SM, SP-SM [3]	Too sandy.
	---	PT	Excess humus.
	---	All other	Excess fines.
3. Layer thickness (inches)	---	<36	Thin layer.
	>36	---	---
4. Fraction greater than 3 inches (percent by weight) [4]	---	>50	Large stones.
	<50	---	---

[1] Evaluate the thickest layer between 10 and 60 inches and also the bottom layer. Choose the best rating. When rating is based on bottom layer, verify thickness.

[2] 100 minus percent passing No. 4 sieve is greater than 25.

[3] 100 minus percent passing No. 4 sieve is less than 25.

[4] Thickest layer between 10 and 60 inches.

Topsoil

Property	Limits			Restrictive feature
	Good	Fair	Poor	
1. USDA texture	---	---	Ice	Permafrost.
2. Depth to bedrock (inches)	>40	20-40	<20	Depth to rock.
3. Depth to cemented pan (inches)	>40	20-40	<20	Cemented pan.
4. Depth to bulk density greater than 1.8 g/cc (inches)	>40	20-40	<20	Area reclaim.
5. USDA texture [1]	---	LCOS, LS, LFS, LVFS	COS, S, FS, VFS	Too sandy.
6. USDA texture [1]	---	SCL, CL, SICL [2]	SIC, C, SC	Too clayey.
7. USDA texture [1]	---	---	FB, HM, SP, MPT, muck, peat, CE	Excess humus.
8. Fraction greater than 3 inches (percent by weight): [3]				
0 to 40 inches	<5	5-25	>25	Large stones.
40 to 60 inches	<15	15-30	>30	Area reclaim.
9. Coarse fragments (percent): [3]				
0 to 40 inches	<5	5-25	>25	Small stones.
40 to 60 inches	<25	25-50	>50	Area reclaim.
10. Salinity (mmhos/cm) [1]	<4	4-8	>8	Excess salt.
11. Layer thickness (inches)	>40	20-40	<20	Thin layer.
12. Depth to high water table (feet)	---	---	<1	Wetness.
13. Sodium adsorption ratio in the upper 40 inches (great group or phase)	---	---	>12 (halic, natric, alkali phases)	Excess sodium.
14. Soil reaction (pH) [1]	---	---	<3.6	Too acid.
15. Slope (percent)	<8	8-15	>15	Slope.
16. Carbonates	---	---	(4)	Excess lime.

[1] Thickest layer between 0 and 40 inches.

[2] If soil contains more than 3 percent organic matter and has less than 35 percent clay, rate *good*.

[3] Sum (100 minus percent passing No. 10 sieve) and fraction greater than 3 inches. Use dominant condition for restrictive feature.

[4] If the amount of carbonate is so high that it restricts the growth of plants, rate "Poor—excess lime."

Pond Reservoir Areas

Property	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Permeability between 20 and 60 inches (inches/hour)	<0.6	0.6-2.0	>2.0	Seepage.
3. Depth to bedrock (inches)	>60	20-60	<20	Depth to rock.
4. Depth to cemented pan (inches)	>60	20-60	<20	Cemented pan.
5. Slope (percent)	<3	3-8	>8	Slope.
6. USDA texture (all depths)	---	---	Marl, gypsum	Seepage.
7. Downslope movement	---	---	(1)	Slippage.
8. Formation of pits	---	---	(2)	Pitting.

1 If the soil is susceptible to movement downslope when loaded, excavated, or wet, rate "Severe—slippage."
2 If the soil is susceptible to the formation of pits caused by the melting of ground ice when the surface cover is removed, rate "Severe—pitting."

Embankments, Dikes, and Levees

Property [1]	Limits			Restrictive feature
	Slight	Moderate	Severe	
1. USDA texture	---	---	Ice	Permafrost.
2. Layer thickness (inches)	>60	30-60	<30	Thin layer.
3. Unified [2]	---	---	GW, GP, SW, SP, GW-GM, GP-GM, SW-SM, SP-SM, SM, [3] GM [3]	Seepage.
4. Unified [2]	---	GM, [4] CL [5]	ML, [6] SM, [7] SP, [7] CL-ML	Piping.
5. Unified [2]	---	---	PT, OL, OH	Excess humus.
6. Unified [2]	---	---	MH, CH [8]	Hard to pack.
7. Fraction greater than 3 inches (percent by weight) [9]	<15	15-35	>35	Large stones.
8. Depth to high water table (feet)	---	---	+	Ponding.
Apparent	>4	2-4	<2	Wetness.
Perched	>3	1-3	<1	Wetness.
9. Sodium adsorption ratio in the upper 40 inches (great group or phase)	---	---	>12 (natric, halic, alkali phases)	Excess sodium.
10. Salinity (mmhos/cm) (any depth)	<8	8-16	>16	Excess salt.

[1] If the content of gypsum is 5 to 10 percent, rate "Moderate—excess gypsum." If it exceeds 10 percent, rate "Severe—excess gypsum."

[2] Thickest layer between 10 and 60 inches.

[3] Rate *moderate* if more than 20 percent passing No. 200 sieve and *slight* if more than 30 percent passing No. 200 sieve.

[4] Rate *slight* if less than 35 percent passing No. 200 sieve, less than 50 percent passing No. 40 sieve, and less than 65 percent passing No. 10 sieve. The soil must meet all three criteria before it is rated *slight.*

[5] Rate *slight* if PI is greater than 15.

[6] Rate *moderate* if PI is greater than 10.

[7] Rate *moderate* if less than 70 percent passing No. 40 sieve and less than 90 percent passing No. 10 sieve, and rate *slight* if less than 60 percent passing No. 40 sieve and less than 75 percent passing No. 10 sieve.

[8] Rate *moderate* if PI is less than 40.

[9] Weighted average to 40 inches.

Drainage

Property	Limits	Restrictive feature
1. USDA texture	Ice	Permafrost.
2. Depth to high water table (feet) [1]	>3 [2] +	Deep to water. Ponding.
3. Permeability in the upper 40 inches (inches/hour)	<0.2	Percs slowly.
4. Depth to bedrock (inches)	<40	Depth to rock.
5. Depth to cemented pan (inches)	<40	Cemented pan.
6. Flooding	Common	Flooding.
7. Total subsidence	Any entry	Subsides.
8. Fraction greater than 3 inches (percent by weight) [3]	>25	Large stones.
9. Potential frost action	High	Frost action.
10. Slope (percent)	>3	Slope.
11. USDA texture [3]	COS, S, FS, VFS, LCOS, LS, LFS, LVFS, SG, G	Cutbanks cave.
12. Salinity (mmhos/cm) (any depth)	>8	Excess salt.
13. Sodium adsorption ratio in the upper 40 inches (great group or phase)	>12 (natric, halic, alkali phases)	Excess sodium.
14. Sulfidic materials (great group)	Sulfaquents, Sulfihemists	Excess sulfur.
15. Soil reaction (pH) (any depth)	<3.6	Too acid.
16. Downslope movement	(4)	Slippage.
17. Complex landscape	(5)	Complex slope.
18. Availability of outlets	(6)	Poor outlets.

[1] If "Deep to water," disregard other properties.

[2] If irrigated, consider other restrictive features if the water table is between 3 and 5 feet.

[3] Thickest layer between 10 and 60 inches.

[4] If the soil is susceptible to movement downslope when loaded, excavated, or wet, list "Slippage" as a restrictive feature.

[5] If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.

[6] If good outlets are difficult to find, list "Poor outlets" as a restrictive feature.

Irrigation

Property	Limits	Restrictive feature
1. USDA texture	Ice	Permafrost.
2. Slope (percent)	>3	Slope.
3. Fraction greater than 3 inches (percent by weight) [1]	>25	Large stones.
4. Depth to high water table (feet)	+ <3 [2]	Ponding. Wetness.
5. Available water capacity (inches/inch)	<0.10	Droughty.
6. USDA texture (surface layer)	COS, S, FS, VFS, LCOS, LS, LFS, LVFS	Fast intake.
7. USDA texture (surface layer)	SIC, C, SC	Slow intake.
8. Wind erodibility group	1, 2, 3	Soil blowing.
9. Permeability in the upper 60 inches (inches/hour)	<0.2	Percs slowly.
10. Depth to bedrock (inches)	<40	Depth to rock.
11. Depth to cemented pan (inches)	<40	Cemented pan.
12. Fragipan (great group)	All fragi	Rooting depth.
13. Bulk density in the upper 40 inches (g/cc)	>1.7	Rooting depth.
14. Erosion factor K (surface layer)	>.35	Erodes easily.
15. Flooding	Common	Flooding.
16. Sodium adsorption ratio in the upper 40 inches (great group or phase)	>12 (natric, halic, alkali phases)	Excess sodium.
17. Salinity in the upper 40 inches (mmhos/cm)	>4	Excess salt.
18. Soil reaction (pH) (any depth)	<3.6	Too acid.
19. Complex landscape	(3)	Complex slope.
20. Formation of pits	(4)	Pitting.
21. Carbonates	(5)	Excess lime.

[1] Weighted average to 40 inches.

[2] Disregard if depth to water table is below 3 feet during growing season.

[3] If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.

[4] If the soil is susceptible to the formation of pits caused by the melting of ground ice when ground cover is removed, list "Pitting" as a restrictive feature.

[5] If the amount of carbonate is so high that it restricts the growth of plants, list "Excess lime" as a restrictive feature.

Terraces and Diversions

Property [1]	Limits	Restrictive feature
1. USDA texture	Ice	Permafrost.
2. Slope (percent)	>8	Slope.
3. Fraction greater than 3 inches (percent by weight) [2]	>15	Large stones.
4. Depth to bedrock (inches)	<40	Depth to rock.
5. Depth to cemented pan (inches)	<40	Cemented pan.
6. Erosion factor K (upper 40 inches)	>.35	Erodes easily.
7. Depth to high water table (feet)	+ <3.0	Ponding. Wetness.
8. Fragipan (great group)	All fragi	Rooting depth.
9. USDA texture [3]	COS, S, FS, LS, LCOS, SG	Too sandy.
10. Wind erodibility group	1, 2, 3	Soil blowing.
11. Permeability (inches/hour) [3]	<0.2	Percs slowly.
12. Downslope movement	([4])	Slippage.
13. Complex landscape	([5])	Complex slope.
14. Availability of outlets	([6])	Poor outlets.

[1] If the content of gypsum exceeds 5 percent, list "Excess gypsum" as a restrictive feature.
[2] Weighted average to 40 inches.
[3] Thickest layer between 10 and 60 inches.
[4] If the soil is susceptible to movement downslope when loaded, excavated, or wet, list "Slippage" as a restrictive feature.
[5] If complex and irregular slopes cause difficulty in design, installation, or functioning of the system, list "Complex slope" as a restrictive feature.
[6] If good outlets are difficult to find, list "Poor outlets" as a restrictive feature.

Guide for Estimating the Hazard of Erosion on Bare Soil in Nevada

("K" means erosion factor K; "S" means percent slope; "I" means wind erodibility index; "C" means climatic factor)

	Water (K x S)	Wind (I x C)
Slight	<4	<60
Moderate	4-8	60-100
High	>8	>100

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-80 at Lovelock, Nevada)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	44.6	19.8	32.2	64	-2	39	0.56	0.17	0.87	2	1.5
February	51.8	24.4	38.1	70	7	77	.56	.10	.92	2	.0
March	57.4	27.9	42.7	76	13	141	.41	.09	.65	2	.4
April	66.0	34.4	50.2	85	17	319	.51	.14	.81	2	.0
May	75.1	43.3	59.2	95	27	595	.46	.10	.75	2	.0
June	83.9	50.2	67.1	101	36	813	.53	.02	.89	2	.0
July	93.8	57.0	75.4	105	43	1,097	.22	---	.38	1	.0
August	91.5	53.4	72.5	104	40	1,008	.32	---	.58	1	.0
September	83.6	45.6	64.6	97	30	738	.35	---	.60	1	.0
October	71.6	36.0	53.8	89	19	428	.35	---	.63	1	.0
November	55.7	26.4	41.1	74	8	105	.44	.10	.71	2	.3
December	46.3	20.5	33.4	61	2	19	.62	.22	.95	2	.9
Yearly:											
Average	68.4	36.6	52.5	---	---	---	---	---	---	---	---
Extreme	---	---	---	106	-4	---	---	---	---	---	---
Total	---	---	---	---	---	5,379	5.33	3.95	6.67	20	3.1

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

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-80 at Lovelock, Nevada)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 3	May 11	May 25
2 years in 10 later than--	Apr. 26	May 6	May 20
5 years in 10 later than--	Apr. 13	Apr. 27	May 9
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 14	Sept. 28	Sept. 19
2 years in 10 earlier than--	Oct. 19	Oct. 4	Sept. 25
5 years in 10 earlier than--	Oct. 28	Oct. 15	Oct. 5

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-80 at Lovelock, Nevada)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	172	147	121
8 years in 10	181	155	131
5 years in 10	197	171	149
2 years in 10	214	186	166
1 year in 10	222	195	176

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
001	Playas	46,142	2.3
002	Badland	10,746	0.5
003	Slickens	577	*
004	Dumps, mine	1,076	0.1
005	Pits, gravel	100	*
110	Adelaide silt loam, 2 to 8 percent slopes	12,112	0.6
112	Adelaide silt loam, 4 to 15 percent slopes	9,222	0.5
113	Adelaide silt loam, 0 to 2 percent slopes**	6,315	0.3
120	Hawsley sand, moderately wet, 0 to 2 percent slopes**	2,715	0.1
121	Hawsley fine sand, 2 to 8 percent slopes	6,325	0.3
122	Hawsley-Ragtown association	13,627	0.7
131	Jerval-Chilper-Bluewing association	7,165	0.4
132	Jerval-Knoss-Chilper association	20,770	1.1
133	Jerval-Trocken-Golconda association	18,341	0.9
144	Beoska-Tenabo-Dun Glen association	6,310	0.3
146	Beoska-Oxcorel-Whirlo association	10,124	0.5
151	Blackhawk silt loam, 0 to 2 percent slopes**	16,681	0.8
161	Bliss-Chiara association, sloping	1,152	0.1
162	Bliss-Chiara association, moderately steep	3,597	0.2
170	Shabliss-Enko-Valmy association	6,211	0.3
180	Chiara stony very fine sandy loam, 2 to 4 percent slopes**	126	*
190	Theon-Singatse-Rock outcrop association	29,779	1.5
191	Theon-Singatse association	36,032	1.8
201	Pirouette-Rezave-Rubble land association	22,378	1.1
211	Preble Variant-Whirlo association	766	*
220	Duffer silty clay loam*	1,829	0.1
221	Duffer silty clay loam, occasionally flooded, slightly saline**	1,284	0.1
231	Dun Glen very fine sandy loam, 2 to 4 percent slopes**	6,253	0.3
233	Dun Glen very fine sandy loam, 0 to 2 percent slopes**	23,462	1.2
234	Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes**	5,250	0.3
241	Toulon-Mazuma-Bluewing association	16,600	0.8
251	Whirlo-Beoska-Oxcorel association	26,264	1.3
260	Golconda silt loam, 2 to 8 percent slopes	2,878	0.1
261	Golconda silt loam, 8 to 15 percent slopes	236	*
270	Goldrun fine sand, 4 to 15 percent slopes	9,943	0.5
281	Golsum-Spinlin-Harcany association	5,212	0.3
321	Humboldt silty clay loam, slightly saline-sodic**	7,144	0.4
322	Humboldt silty clay loam, strongly saline-sodic**	248	*
330	McConnel loam, 0 to 2 percent slopes**	3,008	0.2
331	McConnel gravelly fine sandy loam, 4 to 8 percent slopes**	1,261	0.1
360	Needle Peak silt loam, slightly saline-sodic**	5,818	0.3
380	Ninch fine sand, 0 to 15 percent slopes**	513	*
400	Orovada loam, 0 to 2 percent slopes**	1,578	0.1
406	Orovada very fine sandy loam, 2 to 8 percent slopes	2,425	0.1
431	Preble silt loam, strongly saline-sodic**	3,825	0.2
451	Pumper loam**	1,276	0.1
470	Raglan silt loam**	5,471	0.3
471	Raglan silt loam, moderately saline-sodic**	9,705	0.5
480	Rebel loam, 0 to 2 percent slopes**	3,544	0.2
481	Rebel loam, 2 to 4 percent slopes**	392	*
482	Rebel loam, rarely flooded, 0 to 2 percent slopes**	1,077	0.1
500	Pocker silty clay loam**	1,348	0.1
561	Sonoma silt loam, occasionally flooded, strongly saline-sodic**	3,486	0.2
562	Sonoma silt loam, drained, strongly saline-sodic**	2,054	0.1
563	Sondoa-Swingler-Isolde association	10,776	0.5
581	Sumine-Gosumi-Nomara association	9,950	0.5
591	Trunk-Hoot association	2,221	0.1
592	Trunk-Pocan association	20,009	1.0
596	Trunk-Burrita association	22,570	1.1
598	Trunk-Oxcorel Variant-Bojo association	5,554	0.3
599	Trunk-Burrita-Rock outcrop association	831	*
600	Valmy fine sandy loam, 0 to 2 percent slopes**	165	*
610	Weso very fine sandy loam, 0 to 2 percent slopes**	22,053	1.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
614	Weso silt loam, moderately saline-sodic, 0 to 2 percent slopes**	4,589	0.2
615	Weso-Misad-Beoska association	5,595	0.3
652	Burrita-Hoot-Rock outcrop association	11,167	0.6
653	Burrita-Burnborough association	2,126	0.1
660	Oxcorel-Beoska-Whirlo association	38,115	1.9
661	Oxcorel-Orovada association	3,334	0.2
662	Oxcorel-Whirlo-Trocken Variant association	9,504	0.4
663	Oxcorel-Weso-Beoska association	66,279	3.4
664	Oxcorel-Golconda association	4,622	0.2
666	Oxcorel-Trocken Variant-Snapp association	4,071	0.2
669	Oxcorel-Beoska association	27,801	1.4
670	Misad-Snapp-Oxcorel association	54,185	2.8
673	Misad-Golconda-Tenabo association	25,984	1.3
675	Misad-Orovada-Snapp association	2,465	0.1
676	Misad Variant-Dun Glen-Misad Variant, strongly sloping, association	4,825	0.2
680	Bojo-Trunk-Rock outcrop association	4,825	0.2
683	Bojo, steep-Hoot-Bojo association	33,407	1.7
691	Chilper-Trocken-Jerval association	34,426	1.8
701	Atlow-Wiskan association	50,284	2.6
703	Atlow, steep-Daick-Atlow association	4,584	0.2
704	Atlow, steep-Hoot-Atlow association	1,456	0.1
750	Snapp-Oxcorel association	10,200	0.5
751	Snapp-Sodhouse association	1,353	0.1
752	Snapp-Orovada association	16,261	0.8
812	Boton-Playas association	5,398	0.3
813	Batan-Wendane-Valmy association	10,807	0.5
814	Batan silt loam, moderately saline-sodic**	923	*
823	Trocken-Bluewing association	7,344	0.4
825	Trocken very gravelly very fine sandy loam, moderately saline-sodic, 2 to 4 percent slopes	5,683	0.3
826	Trocken-Ragtown association	10,556	0.5
827	Trocken gravelly very fine sandy loam, 2 to 8 percent slopes	26,647	1.4
831	Benin-Yobe-Wendane association	3,524	0.2
900	Roca-Wiskan-Reluctan association	30,992	1.6
901	Roca-Reluctan association	65,570	3.3
902	Roca-Reluctan-Sumya association	73,357	3.8
903	Roca-Burnborough-Rock outcrop association	9,060	0.5
905	Roca-Reluctan Variant association, steep	12,978	0.7
906	Roca-Reluctan Variant association, very steep	3,910	0.2
911	Tenabo-Daick-Oxcorel association	9,415	0.5
930	Bubus-Benin-Wendane association	7,704	0.4
931	Bubus-Valmy association	6,301	0.3
932	Bubus very fine sandy loam, 0 to 2 percent slopes**	7,737	0.4
950	Puffer, very steep-Xine-Puffer association	1,203	0.1
953	Puffer-Bojo-Rock outcrop association	4,810	0.2
954	Puffer-Xine-Rock outcrop association	11,176	0.6
955	Puffer-Mulhop-Rock outcrop association	18,574	0.9
956	Puffer-Linrose-Iver association	20,008	1.0
957	Puffer, very steep-Atlow-Puffer association	16,015	0.8
960	Findout-Puffer-Rock outcrop association	5,820	0.3
980	Mazuma very fine sandy loam, 0 to 4 percent slopes	11,201	0.6
981	Mazuma fine sandy loam, strongly saline-sodic, 0 to 2 percent slopes	3,927	0.2
983	Mazuma-Swingler-Trocken association	39,920	2.0
984	Mazuma-Bluewing-Woolsey association	2,027	0.1
985	Mazuma-Toulon-Chumall association	26,856	1.4
986	Mazuma-Trocken association	65,925	3.5
987	Mazuma-Yipor association	9,391	0.5
988	Mazuma very fine sandy loam, 2 to 8 percent slopes	7,648	0.4
990	Argenta very fine sandy loam, 0 to 2 percent slopes	3,973	0.2
1020	Wholan very fine sandy loam, rarely flooded, 0 to 2 percent slopes**	11,618	0.6
1030	Wendane-Yobe association	11,338	0.6
1070	Hoot-Burrita-Bojo association	3,217	0.2
1071	Hoot-Wiskan-Atlow association	5,588	0.3

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
1073	Hoot, steep-Bojo-Hoot association	22,875	1.2
1090	Bojo Variant-Schamp-Trunk association	1,576	0.1
1111	Yipor silt loam, sandy substratum	6,523	0.3
1112	Yipor silt loam	7,435	0.4
1113	Yipor-Badland association	3,318	0.2
1114	Yipor silt loam, occasionally flooded	825	*
1121	Genegraf-Chilper-Bluewing association	11,037	0.6
1122	Genegraf-Trocken-Bluewing association	10,701	0.5
1130	Cleaver-Trocken-Bluewing association	1,618	0.1
1140	Layview, very steep-Tusel-Layview association	13,558	0.7
1160	Slaw-Ragtown association	374	*
1200	Bluewing, moderately steep-Bluewing-Daick association	8,430	0.4
1201	Bluewing gravelly sandy loam, 2 to 8 percent slopes	324	*
1210	Daick-Rezave-Rubble land association	7,410	0.4
1230	Knott-Sodhouse-Wholan association	9,741	0.5
1231	Knott-Sodhouse-Cortez association	2,876	0.1
1232	Knott, moderately steep-Snapp-Knott association	7,162	0.4
1270	Gol-Say association	15,200	0.8
1271	Gol-Say-Rock outcrop association, steep	4,755	0.2
1272	Gol-Say-Rock outcrop association, very steep	578	*
1280	Gwena-Enko-Frewa association	11,230	0.6
1290	Slaven-Linrose-Iver association	23,330	1.2
1291	Slaven-Iver-Cleavage association	31,481	1.6
1292	Slaven-Iver-Rock outcrop association	3,295	0.2
1320	Alyan-Chen-Rock outcrop association	6,081	0.3
1321	Alyan-Slaven association	8,201	0.4
1340	Laped-Colbar association	4,174	0.2
1350	Burnborough-Cleavage-Reluctan association	643	*
1360	Kram-Hopeka-Rock outcrop association	22,736	1.2
1390	Mulhop-Xine-Rock outcrop association	3,263	0.2
1410	Yobe-Bezo-Yobe, occasionally flooded, association	25,167	1.3
1411	Yobe-Sonoma association	6,106	0.3
1412	Yobe silt loam, occasionally flooded	2,432	0.1
1420	Goldrun Variant sandy loam, 4 to 15 percent slopes	793	*
1430	Yobe Variant silty clay	4,721	0.2
1450	Alley-Snowmore-Rock outcrop association	6,535	0.3
1480	Tusel-Layview-Rock outcrop association	8,485	0.4
1490	Xine-Mulhop-Puffer association	5,578	0.3
1500	Cortez very fine sandy loam, 2 to 8 percent slopes	4,935	0.3
1501	Cortez-Tenabo-Beoska association	2,798	0.1
1510	Locane-Rock outcrop association	5,790	0.3
1530	Polum-Dekoom-Polum Variant association	12,094	0.6
1540	Dewar-Tenabo-Beoska association	12,832	0.7
1550	Eastwell-Shabliss-Blackhawk association	4,027	0.2
1551	Eastwell, moderately steep-Shabliss-Eastwell association	1,191	0.1
1560	Denay-Wereld-Xine association	14,802	0.8
1570	Pocker Variant loam, wet**	837	*
1640	Isolde-Parran-Appian association	4,860	0.2
1650	Bango-Appian association	11,314	0.6
1660	Biddleman-Trocken-Biddleman, stony, association	1,588	0.1
3000	Jobpeak-Teguro-Rock outcrop association	18,286	0.9
3010	Bedwyr-Bedzee-Jobpeak association	1,348	0.1
3020	Uripnes-Rock outcrop association	168	*
3030	Singatse, very steep-Rock outcrop-Singatse association	4,499	0.2
3031	Singatse-Jobpeak-Rock outcrop association	1,310	0.1
3040	Madeline-Millerlux association	379	*
3050	Millerlux-Ninemile-Madeline association	493	*
	Water	17,120	0.9
	Total	1,965,973	100.0

* Less than 0.1 percent.

** Map unit boundaries were plotted and verified at closely spaced intervals.

TABLE 5.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
001*. Playas											
002*. Badland											
003*. Slickens											
004*. Dumps											
005*. Pits											
110, 112, 113---- Adelaide	0-2	Silt loam--------	ML, CL-ML	A-4	0-5	85-95	80-90	70-90	55-70	15-25	NP-10
	2-11	Loam, silt loam, very fine sandy loam.	ML, CL-ML	A-4	0-5	85-95	80-90	70-90	55-85	15-25	NP-10
	11-14	Cemented layer---	---	---	---	---	---	---	---	---	---
	14-30	Clay loam--------	CL	A-6, A-7	0-5	95-100	90-100	75-90	55-70	35-45	15-20
	30-40	Indurated layer--	SM-SC, CL-ML, GM-GC	A-4	0-5	70-85	65-75	60-70	40-60	15-25	5-10
	40-60	Extremely gravelly loamy sand.	GP, GP-GM	A-1	0-5	15-30	10-25	5-20	0-10	---	NP
120---------- Hawsley	0-3	Sand----------	SM, SP-SM	A-2, A-3	0	100	90-100	60-70	5-15	---	NP
	3-60	Stratified fine sand to coarse sand.	SM, SP-SM	A-2, A-3	0	85-100	75-100	55-70	5-15	---	NP
121---------- Hawsley	0-3	Fine sand--------	SM	A-2	0	100	100	75-95	15-30	---	NP
	3-60	Stratified fine sand to coarse sand.	SM, SP-SM	A-2, A-3	0	85-100	75-100	55-70	5-25	---	NP
122*: Hawsley---------	0-3	Fine sand--------	SM	A-2	0	100	100	75-95	15-30	---	NP
	3-60	Stratified fine sand to coarse sand.	SM, SP-SM	A-2, A-3	0	85-100	75-100	55-70	5-25	---	NP
Ragtown---------	0-7	Silt loam--------	ML, CL-ML	A-4	0	100	100	90-100	75-85	20-30	NP-10
	7-60	Stratified silty clay loam to clay.	CL, CH	A-7	0	100	100	90-100	75-95	40-55	20-30
131*: Jerval----------	0-6	Stony loam-------	CL-ML	A-4	5-10	95-100	85-100	70-95	50-75	25-30	5-10
	6-22	Gravelly clay loam, gravelly silty clay loam.	CL	A-6	0-5	65-85	60-75	55-75	50-65	35-40	15-20
	22-60	Very gravelly sandy loam, very gravelly fine sandy loam.	GM	A-1	0-10	45-60	35-50	25-45	15-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
131*:											
Chilper	0-3	Very stony loam	ML	A-4	10-15	85-95	80-90	65-80	50-65	20-25	NP-5
	3-13	Very fine sandy loam.	ML	A-4	0-5	80-100	75-100	70-90	50-70	---	NP
	13-29	Clay loam, clay	CL, CH	A-7	0	80-100	75-100	65-80	50-70	40-55	15-30
	29-60	Extremely gravelly sandy loam.	GP, GP-GM	A-1	0-10	15-35	10-25	5-20	0-10	---	NP
Bluewing	0-5	Very gravelly loam.	GM	A-1, A-2	0-10	40-60	30-50	25-50	10-30	---	NP
	5-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM	A-1	5-25	30-40	25-35	15-25	5-10	---	NP
132*:											
Jerval	0-6	Gravelly very fine sandy loam.	SM	A-4	0-10	70-85	55-75	50-75	35-50	---	NP
	6-22	Gravelly clay loam, gravelly silty clay loam.	CL	A-6	0-5	65-85	60-75	55-75	50-65	35-40	15-20
	22-60	Very gravelly sandy loam, very gravelly fine sandy loam.	GM	A-1	0-10	45-60	35-50	25-45	15-25	---	NP
Knoss	0-7	Cobbly very fine sandy loam.	ML, SM, GM	A-4	10-25	70-90	65-85	55-75	45-60	15-25	NP-5
	7-15	Clay	CL, CH	A-7	0-5	80-100	75-100	70-95	70-95	45-65	20-35
	15-52	Indurated layer--	---	---	---	---	---	---	---	---	---
	52-60	Extremely gravelly loamy sand.	GP-GM	A-1	5-15	30-50	10-25	5-20	5-10	---	NP
Chilper	0-3	Cobbly very fine sandy loam.	ML, GM, SM	A-4	10-25	70-90	65-85	60-80	45-60	---	NP
	3-13	Very fine sandy loam.	ML	A-4	0-5	80-100	75-100	70-90	50-70	---	NP
	13-29	Clay loam, clay	CL, CH	A-7	0	80-100	75-100	65-80	50-70	40-55	15-30
	29-60	Extremely gravelly sandy loam.	GP, GP-GM	A-1	0-10	15-35	10-25	5-20	0-10	---	NP
133*:											
Jerval	0-6	Gravelly very fine sandy loam.	SM	A-4	0-10	70-85	55-75	50-75	35-50	---	NP
	6-22	Gravelly clay loam, gravelly silty clay loam.	CL	A-6	0-5	65-85	60-75	55-75	50-65	35-40	15-20
	22-60	Very gravelly sandy loam, very gravelly fine sandy loam.	GM	A-1	0-10	45-60	35-50	25-45	15-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
133*:											
Trocken	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
Golconda	0-10	Gravelly very fine sandy loam.	GM-GC	A-4	0-10	65-75	55-65	45-65	35-50	20-30	5-10
	10-23	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-70	35-45	15-20
	23-36	Cemented layer---	---	---	---	---	---	---	---	---	---
	36-60	Very gravelly loamy coarse sand, very gravelly sandy loam.	GP-GM, GM	A-1	0	30-55	25-50	10-40	5-20	---	NP
144*:											
Beoska	0-13	Very stony loam	ML	A-4	15-30	85-95	75-90	65-80	50-65	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	SM, GM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
Tenabo	0-5	Very cobbly very fine sandy loam.	SM-SC, SM	A-4	30-50	75-90	60-75	50-70	35-50	15-25	NP-10
	5-17	Clay loam, sandy clay loam.	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	15-25
	17-24	Indurated layer--	---	---	---	---	---	---	---	---	---
	24-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GW-GM, GM, GP-GM	A-1	10-25	40-60	35-55	25-40	5-20	---	NP
Dun Glen	0-3	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	50-65	15-25	NP-5
	3-10	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	55-70	15-25	NP-5
	10-60	Fine sandy loam, very fine sandy loam.	SM	A-4	0	90-100	85-100	70-85	35-50	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
146*:											
Beoska	0-13	Gravelly very fine sandy loam.	SM	A-4	0-10	70-80	55-75	50-70	35-50	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Whirlo	0-3	Very stony very fine sandy loam.	SM, GM	A-4	15-35	60-85	55-85	50-75	35-50	15-25	NP-5
	3-11	Fine sandy loam, gravelly loam, gravelly sandy loam.	SM, GM	A-2, A-4	0-10	60-90	55-85	40-60	30-50	15-25	NP-5
	11-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GM	A-1, A-2	5-30	45-60	25-50	20-40	10-30	15-25	NP-5
151	0-3	Silt loam	ML	A-4	0-5	95-100	95-100	85-95	70-80	30-35	NP-5
Blackhawk	3-14	Silt loam, loam, very fine sandy loam.	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	14-30	Cemented layer	---	---	---	---	---	---	---	---	---
	30-48	Stratified loam to gravelly coarse sand.	SM	A-1, A-2	0	75-90	70-85	35-50	10-30	---	NP
	48-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, SP, GP, SP-SM	A-1	0	45-60	20-50	10-35	0-10	---	NP
161*, 162*:											
Bliss	0-3	Fine sandy loam	SM	A-4	0	90-100	85-100	75-95	35-50	15-20	NP-5
	3-11	Very fine sandy loam, silt loam.	SM, ML	A-4	0	80-100	75-100	65-90	40-70	15-20	NP-5
	11-21	Very fine sandy loam, silt loam.	SM, ML	A-4	0	80-100	75-100	60-90	35-65	---	NP
	21-45	Cemented layer	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
161*, 162*:											
Chiara	0-4	Fine sandy loam	SM	A-4	0	95-100	90-100	65-75	40-50	---	NP
	4-15	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	70-80	25-35	NP-5
	15-19	Indurated layer--	---	---	---	---	---	---	---	---	---
170*:											
Shabliss	0-3	Very fine sandy loam.	SM, ML	A-4	0-5	95-100	95-100	85-95	45-70	---	NP
	3-19	Very fine sandy loam, loam, silt loam.	ML	A-4	0-5	95-100	95-100	80-95	60-75	---	NP
	19-30	Cemented layer---	---	---	---	---	---	---	---	---	---
	30-60	Loamy sand, gravelly loamy sand.	SM	A-1	0-5	70-85	60-80	35-50	10-25	---	NP
Enko	0-6	Fine sandy loam	SM-SC	A-4	0	95-100	85-100	60-75	35-50	20-30	5-10
	6-29	Loam, sandy loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	29-60	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-2, A-4	0	85-100	75-100	60-90	30-65	20-25	5-10
Valmy	0-3	Fine sandy loam	SM, ML	A-2, A-4	0-5	85-100	80-100	60-80	30-55	15-25	NP-5
	3-60	Stratified very fine sandy loam to gravelly coarse sandy loam.	SM	A-4, A-2, A-1	0-5	80-95	75-90	40-70	20-45	15-25	NP-5
180 Chiara	0-4	Stony very fine sandy loam.	ML	A-4	20-35	90-100	85-95	75-90	55-75	20-25	NP-5
	4-15	Silt loam, very fine sandy loam, loam.	ML	A-4	0-5	90-100	85-95	75-90	55-70	25-35	NP-5
	15-19	Indurated layer--	---	---	---	---	---	---	---	---	---
190*:											
Theon	0-3	Very cobbly loam	GM-GC, GM, SM-SC, SM	A-2, A-4	35-55	55-75	50-70	40-60	30-45	20-30	NP-10
	3-8	Very gravelly clay loam, very gravelly sandy clay loam.	GC	A-2	0-15	40-60	30-50	25-40	20-30	30-40	10-20
	8-10	Weathered bedrock	---	---	---	---	---	---	---	---	---
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Singatse	0-4	Extremely cobbly loam.	GM	A-1, A-2	40-50	30-40	25-35	20-30	15-30	20-25	NP-5
	4-8	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-10	35-55	30-50	20-45	10-35	15-25	NP-5
	8-15	Weathered bedrock	---	---	---	---	---	---	---	---	---
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
191*:											
Theon	0-3	Very cobbly loam	GM-GC, GM, SM-SC, SM	A-2, A-4	35-55	55-75	50-70	40-60	30-45	20-30	NP-10
	3-8	Very gravelly clay loam, very gravelly sandy clay loam.	GC	A-2	0-15	40-60	30-50	25-40	20-30	30-40	10-20
	8-10	Weathered bedrock	---	---	---	---	---	---	---	---	---
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Singatse	0-4	Extremely cobbly loam.	GM	A-1, A-2	40-50	30-40	25-35	20-30	15-30	20-25	NP-5
	4-8	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-10	35-55	30-50	20-45	10-35	15-25	NP-5
	8-15	Weathered bedrock	---	---	---	---	---	---	---	---	---
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
201*:											
Pirouette	0-4	Very stony very fine sandy loam.	SM, SM-SC, GM, GM-GC	A-4	35-50	65-80	65-75	55-70	35-50	20-30	NP-10
	4-14	Very cobbly clay loam.	SC, CL, GC	A-6, A-7	30-40	55-75	50-65	40-60	35-55	35-45	15-20
	14-16	Indurated layer--	---	---	---	---	---	---	---	---	---
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rezave	0-3	Extremely stony very fine sandy loam.	SM	A-4	35-45	90-100	85-95	60-80	35-50	20-25	NP-5
	3-14	Clay, clay loam, stony clay.	CL, CH	A-7	5-30	90-100	90-100	80-100	65-95	40-60	15-35
	14-16	Very gravelly clay, gravelly clay loam.	SC, CL	A-7	5-10	80-90	50-70	50-70	35-60	40-50	15-25
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rubble land.											
211*:											
Preble Variant--	0-5	Very fine sandy loam.	SM, ML	A-4	0	95-100	90-100	80-95	45-60	20-25	NP-5
	5-60	Stratified sandy clay loam to gravelly sandy loam.	SC, CL	A-2, A-6	0-5	80-95	75-90	50-80	30-55	25-35	10-15
Whirlo	0-11	Very fine sandy loam.	ML, SM	A-4	0	80-95	75-85	65-80	45-60	20-25	NP-5
	11-60	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
220 Duffer	0-16	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	16-72	Silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	85-95	30-45	10-20

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
221---------- Duffer	0-16	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	16-72	Silt loam, silty clay loam.	CL	A-6	0	100	100	95-100	85-95	30-40	10-20
231, 233--------- Dun Glen	0-3	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	50-65	15-25	NP-5
	3-10	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	55-70	15-25	NP-5
	10-60	Fine sandy loam, very fine sandy loam.	SM	A-4	0	90-100	85-100	70-85	35-50	15-25	NP-5
234---------- Dun Glen	0-3	Silt loam--------	ML	A-4	0	100	100	95-100	80-90	15-25	NP-5
	3-10	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	55-70	20-25	NP-5
	10-60	Fine sandy loam, very fine sandy loam, loam.	SM	A-4	0	90-100	85-100	70-85	35-50	20-25	NP-5
241*:											
Toulon----------	0-13	Very gravelly loam.	GM, SM	A-1, A-2	0-10	55-70	40-50	30-45	20-35	---	NP
	13-18	Very gravelly sandy loam, very gravelly loam, very gravelly coarse sandy loam.	GM	A-1, A-2	0-5	40-60	25-40	15-35	10-30	---	NP
	18-60	Stratified gravelly coarse sand to extremely cobbly coarse sand.	GP, GP-GM	A-1	25-50	40-50	25-40	5-20	0-10	---	NP
Mazuma----------	0-13	Silt loam--------	ML	A-4	0	100	100	90-100	70-80	20-25	NP-5
	13-22	Sandy loam, fine sandy loam.	SM	A-4, A-2	0	100	100	90-100	30-50	20-25	NP-5
	22-60	Stratified silt loam to gravelly coarse sand.	SM, ML	A-2, A-4	0	75-100	70-85	50-75	25-55	20-25	NP-5
Bluewing--------	0-13	Very gravelly loam.	GM	A-1, A-2	0-10	40-60	30-50	25-50	10-30	---	NP
	13-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM	A-1	5-25	30-40	25-35	15-25	5-10	---	NP
251*:											
Whirlo----------	0-7	Very gravelly loam.	GM	A-1, A-2	5-15	45-60	35-50	25-40	15-30	15-25	NP-5
	7-11	Gravelly sandy loam, gravelly loam, fine sandy loam.	SM, GM	A-2, A-4	0-10	60-95	55-85	40-60	25-50	15-25	NP-5
	11-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GM	A-1, A-2	5-30	45-60	25-50	20-40	10-30	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
251*:											
Beoska	0-13	Very stony loam	ML	A-4	15-30	85-95	75-90	65-80	50-65	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	SM, GM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
Oxcorel	0-8	Very stony loam	ML	A-4	10-25	70-100	65-90	60-80	50-70	20-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0	85-95	80-90	65-85	60-80	40-55	20-30
	34-60	Very gravelly loam, very gravelly sandy loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
260, 261	0-10	Silt loam	ML	A-4	0	95-100	90-100	80-100	65-90	20-30	NP-5
Golconda	10-23	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-80	35-45	15-20
	23-36	Cemented layer	---	---	---	---	---	---	---	---	---
	36-60	Stratified very gravelly sandy loam to extremely gravelly loamy coarse sand.	GP-GM, GM, GP	A-1	0	20-55	15-50	5-40	0-20	---	NP
270	0-8	Fine sand	SM	A-2	0	100	100	75-90	15-35	---	NP
Goldrun	8-60	Fine sand	SM	A-2	0	100	100	75-90	10-20	---	NP
281*:											
Golsum	0-9	Very cobbly loam	SM, ML	A-4	50-65	75-90	70-85	60-75	40-55	20-25	NP-5
	9-24	Very gravelly clay loam, very gravelly clay, very cobbly clay.	GC	A-2	0-40	40-55	30-50	30-45	25-35	50-60	30-40
	24-31	Very gravelly loam.	GC	A-2	0-5	40-50	30-40	25-35	20-30	30-40	10-20
	31	Weathered bedrock	---	---	---	---	---	---	---	---	---
Spinlin	0-6	Very stony silt loam.	CL, CL-ML	A-6, A-4	25-35	80-85	75-85	60-70	50-60	25-35	5-15
	6-36	Very cobbly clay, very gravelly clay.	GC, SC	A-7	35-45	55-80	45-70	40-60	35-50	50-65	25-35
	36	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
281*:											
Harcany	0-4	Stony silt loam	ML	A-4	5-10	75-80	60-70	55-65	50-60	25-30	NP-5
	4-18	Very gravelly silt loam.	GM	A-2, A-4	15-25	55-70	40-50	35-45	30-40	25-30	NP-5
	18-72	Extremely gravelly sandy loam.	GP-GM, GW-GM	A-1	15-25	25-40	15-35	10-20	5-10	20-25	NP-5
321	0-6	Silty clay loam	CL	A-7	0	100	100	100	90-100	40-50	20-25
Humboldt	6-60	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
322	0-13	Silty clay loam	CL	A-7	0	100	100	100	90-100	40-50	20-25
Humboldt	13-60	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
330	0-20	Loam	ML	A-4	0	95-100	85-95	70-80	50-60	15-25	NP-5
McConnel	20-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
331	0-20	Gravelly fine sandy loam.	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	15-25	NP-5
McConnel	20-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP	A-1	0-15	25-35	10-35	5-15	0-5	---	NP
360	0-4	Silt loam	CL, ML	A-6, A-7	0	100	100	95-100	80-90	30-45	10-15
Needle Peak	4-60	Silt loam, silty clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	80-95	30-50	10-20
380	0-6	Fine sand	SM	A-2	0	100	100	80-90	10-25	---	NP
Ninch	6-35	Stratified fine sand to silt loam.	SM	A-2	0	100	100	75-95	15-35	---	NP
	35-41	Stratified fine sand to silt loam.	SM	A-2	0	100	100	75-95	15-35	---	NP
	41-70	Very fine sandy loam, loam, silt loam.	ML	A-4	0	100	100	75-95	55-75	---	NP
400	0-6	Loam	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
Orovada	6-15	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	15-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
406---------- Orovada	0-11	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	20-30	NP-5
	11-24	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	24-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
431---------- Preble	0-4	Silt loam--------	ML	A-4	0	100	95-100	85-95	65-75	20-25	NP-5
	4-44	Fine sandy loam, very fine sandy loam.	ML	A-4	0	100	95-100	75-85	50-60	15-25	NP-5
	44-60	Sandy clay loam	CL, SC	A-6, A-7, A-2	0	95-100	90-100	60-80	30-55	30-45	10-20
451---------- Pumper	0-12	Loam----------	ML	A-4	0	95-100	85-100	75-85	60-70	20-30	NP-5
	12-60	Stratified very gravelly loam to extremely gravelly coarse sand.	GP, GP-GM	A-1	0-5	20-40	20-35	10-20	0-10	---	NP
470---------- Raglan	0-7	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	85-95	75-85	25-35	5-10
	7-13	Silt loam--------	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	75-85	25-40	5-15
	13-60	Stratified very fine sandy loam to silty clay loam.	CL, ML	A-4, A-6	0	95-100	95-100	85-95	60-80	30-40	5-15
471---------- Raglan	0-7	Silt loam--------	CL-ML, ML	A-4	0	95-100	95-100	85-95	75-85	25-35	5-10
	7-13	Silt loam--------	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	75-85	25-40	5-15
	13-60	Stratified very fine sandy loam to silty clay loam.	CL, ML	A-4, A-6	0	95-100	95-100	85-95	70-80	30-40	5-15
480, 481, 482---- Rebel	0-13	Loam----------	ML	A-4	0	95-100	90-100	80-95	50-65	20-25	NP-5
	13-60	Fine sandy loam, sandy loam, loam.	CL-ML, ML	A-4	0	100	85-95	70-80	50-60	20-30	NP-10
500---------- Pocker	0-10	Silty clay loam	CL	A-7	0	100	95-100	90-100	80-95	40-45	25-30
	10-60	Stratified loam to clay.	CH	A-7	0	100	95-100	90-100	80-95	50-60	25-35
561---------- Sonoma	0-9	Silt loam--------	CL	A-6	0	100	100	95-100	75-90	30-35	10-15
	9-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-50	10-25
562---------- Sonoma	0-9	Silt loam--------	CL	A-6	0	100	100	100	95-100	30-35	10-15
	9-60	Stratified silt loam to silty clay loam.	ML, CL	A-6, A-7	0	100	100	100	95-100	35-50	10-25
563*: Sondoa----------	0-9	Silt loam--------	CL, ML	A-4, A-6	0	100	100	95-100	85-95	30-40	5-15
	9-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-50	10-25

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
563*:											
Swingler	0-6	Silt loam	CL-ML, ML	A-4	0	100	100	95-100	80-95	25-35	5-10
	6-60	Silt loam, very fine sandy loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-80	25-35	5-15
Isolde	0-3	Fine sand	SP, SP-SM	A-3	0	100	100	75-90	0-10	---	NP
	3-60	Fine sand, sand	SP, SP-SM	A-3	0	100	100	50-80	0-10	---	NP
581*:											
Sumine	0-2	Cobbly loam	CL-ML	A-4	20-30	80-90	75-85	65-75	50-65	20-30	5-10
	2-22	Very gravelly clay loam, very cobbly clay loam, very gravelly loam.	GC	A-2, A-6, A-7	15-40	45-70	35-65	30-50	25-45	35-45	15-25
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Gosumi	0-8	Stony loam	SM, ML	A-4	5-10	80-90	70-85	65-75	45-55	20-25	NP-5
	8-32	Very gravelly clay loam, very gravelly clay.	GC	A-2, A-7	0-5	45-55	35-50	35-45	30-40	50-60	30-40
	32-42	Gravelly sandy loam.	SM	A-1	0-5	60-70	50-60	30-40	15-25	20-25	NP-5
	42-50	Very gravelly sandy loam.	GM	A-1	0-5	35-60	25-50	20-30	10-20	20-25	NP-5
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Nomara	0-4	Stony silt loam	ML	A-4	5-25	75-95	70-90	65-85	55-70	20-30	NP-5
	4-19	Silt loam, gravelly silt loam.	ML	A-4	0-10	85-95	75-90	70-85	60-70	20-30	NP-5
	19-40	Very gravelly silt loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2, A-6	15-30	20-55	15-50	10-45	10-40	30-40	10-15
	40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
591*:											
Trunk	0-3	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	3-30	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
591*:											
Hoot	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
592*:											
Trunk	0-3	Stony loam	GC, GM-GC, CL, CL-ML	A-4, A-6	5-15	65-85	60-80	55-70	40-70	25-35	5-15
	3-30	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pocan	0-10	Stony loam	CL-ML, CL	A-4, A-6	5-10	95-100	90-100	85-95	60-70	25-35	5-15
	10-26	Gravelly loam, loam.	SC, GC, CL	A-6	0	55-95	50-90	45-70	35-55	30-35	10-15
	26-48	Gravelly loam	SC, GC	A-6	0	55-80	50-75	45-60	35-50	30-35	10-15
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
596*:											
Trunk	0-3	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	3-30	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita	0-8	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	8-17	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
598*:											
Trunk	0-3	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	3-30	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
598*:											
Oxcorel Variant-	0-4	Cobbly loam------	ML	A-4	15-40	85-95	80-90	60-80	50-70	20-25	NP-5
	4-32	Clay, clay loam	CL, CH	A-7	0	85-95	80-90	65-90	60-85	40-55	20-30
	32-55	Clay loam--------	CL	A-6	0	85-100	80-90	70-85	50-65	35-40	15-20
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bojo----------	0-3	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	50-60	40-50	30-40	20-25	5-10
	3-10	Clay loam, gravelly loam, gravelly clay loam.	GC, CL	A-6	0-10	70-90	65-85	60-80	45-70	30-40	10-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
599*:											
Trunk----------	0-3	Stony loam-------	GC, GM-GC, CL, CL-ML	A-4, A-6	5-15	65-85	60-80	55-70	40-70	25-35	5-15
	3-30	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita---------	0-8	Very stony loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	8-17	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
600----------	0-3	Fine sandy loam	SM, ML	A-2, A-4	0-5	85-100	80-100	60-80	30-55	15-25	NP-5
Valmy	3-60	Stratified very fine sandy loam to gravelly coarse sandy loam.	SM	A-4, A-2, A-1	0-5	80-95	75-90	40-70	20-45	15-25	NP-5
610----------	0-7	Very fine sandy loam.	SM, ML	A-4	0	95-100	90-100	75-90	40-55	15-25	NP-5
Weso	7-12	Fine sandy loam, very fine sandy loam, loam.	ML, CL-ML, SM, SM-SC	A-4	0	95-100	85-95	70-85	45-60	15-30	NP-10
	12-60	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	95-100	85-95	70-85	45-60	15-25	NP-5
614----------	0-7	Silt loam--------	CL-ML, ML	A-4	0	95-100	90-100	80-95	75-90	20-30	NP-10
Weso	7-60	Sandy loam, fine sandy loam, very fine sandy loam.	SM, ML	A-4	0	80-100	75-95	65-80	40-60	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
615*:											
Weso	0-7	Very fine sandy loam.	SM, ML	A-4	0	95-100	90-100	75-90	40-55	15-25	NP-5
	7-60	Fine sandy loam, very fine sandy loam, loam.	ML, CL-ML, SM, SM-SC	A-4	0	95-100	85-95	70-85	45-60	15-30	NP-10
Misad	0-11	Gravelly very fine sandy loam.	SM, SM-SC, GM, GM-GC	A-2, A-4	0-5	65-80	55-70	50-65	30-50	15-25	NP-10
	11-28	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	28-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
Beoska	0-13	Gravelly very fine sandy loam.	SM	A-4	0-10	70-80	55-75	50-70	35-50	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
652*:											
Burrita	0-8	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	8-17	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hoot	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
653*:											
Burrita	0-8	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	8-17	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burnborough	0-13	Very gravelly loam.	SC, SM-SC	A-2	5-10	65-75	40-55	30-45	25-35	20-35	5-15
	13-60	Very gravelly loam, very gravelly clay loam.	GC, SC	A-2	15-25	55-65	35-60	20-35	15-30	25-40	10-20
660*:											
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Beoska	0-13	Gravelly very fine sandy loam.	SM	A-4	0-10	70-80	55-75	50-70	35-50	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
Whirlo	0-7	Gravelly very fine sandy loam.	ML, GM	A-4	0	60-75	55-75	50-70	40-60	---	NP
	7-11	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	11-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
661*:											
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
661*:											
Orovada	0-6	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0	60-80	55-75	45-70	30-50	15-25	NP-5
	6-15	Fine sandy loam, loam, very fine sandy loam.	SM, ML	A-4	0	75-100	75-95	60-85	40-70	20-30	NP-5
	15-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
662*:											
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Whirlo	0-11	Very fine sandy loam.	ML, SM	A-4	0	80-95	75-85	65-80	45-60	20-25	NP-5
	11-30	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	30-40	15-35	---	NP
	30-60	Stratified very gravelly loam to extremely gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	10-25	5-10	---	NP
Trocken Variant	0-5	Very gravelly very fine sandy loam.	GM	A-1, A-2	0-10	50-60	35-50	30-50	20-30	15-25	NP-5
	5-60	Stratified extremely gravelly loam to very gravelly loamy sand.	GM	A-1	5-15	40-60	20-35	15-30	10-25	15-25	NP-5
663*:											
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Weso	0-7	Very fine sandy loam.	SM, ML	A-4	0	95-100	90-100	75-90	40-55	15-25	NP-5
	7-12	Fine sandy loam, very fine sandy loam, loam.	ML, CL-ML, SM, SM-SC	A-4	0	95-100	85-95	70-85	45-60	15-30	NP-10
	12-60	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	95-100	85-95	70-85	45-60	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
663*:											
Beoska----------	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
664*:											
Oxcorel---------	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Golconda--------	0-10	Silt loam--------	ML	A-4	0	95-100	90-100	80-100	65-90	20-30	NP-5
	10-23	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-80	35-45	15-20
	23-36	Cemented layer---	---	---	---	---	---	---	---	---	---
	36-60	Stratified very gravelly sandy loam to extremely gravelly loamy coarse sand.	GP-GM, GM, GP	A-1	0	20-55	15-50	5-40	0-20	---	NP
666*:											
Oxcorel---------	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Trocken Variant-	0-5	Very gravelly loam.	GM	A-1, A-2	0-10	50-60	35-50	25-40	20-30	15-25	NP-5
	5-60	Stratified extremely gravelly loam to very gravelly loamy sand.	GM	A-1	5-15	40-60	20-35	15-30	10-25	15-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
666*:											
Snapp	0-9	Very fine sandy loam.	ML, SM	A-4	0	95-100	90-100	75-95	45-65	20-25	NP-5
	9-28	Clay, gravelly clay, gravelly clay loam.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	28-39	Gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7	0	55-80	50-75	45-70	35-60	35-45	15-25
	39-60	Extremely gravelly loamy sand, very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP
669*:											
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
Beoska	0-13	Gravelly very fine sandy loam.	SM	A-4	0-10	70-80	55-75	50-70	35-50	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
670*:											
Misad	0-11	Gravelly very fine sandy loam.	SM, SM-SC, GM, GM-GC	A-2, A-4	0-5	65-80	55-70	50-65	30-50	15-25	NP-10
	11-28	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	28-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
670*:											
Snapp	0-9	Gravelly very fine sandy loam.	GM, SM	A-2	0	55-80	50-75	45-70	25-35	20-25	NP-5
	9-28	Gravelly clay, gravelly clay loam, clay.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	28-39	Gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7	0	55-80	50-75	45-70	35-60	35-45	15-25
	39-60	Extremely gravelly loamy sand, very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
673*:											
Misad	0-11	Gravelly very fine sandy loam.	SM, SM-SC, GM, GM-GC	A-2, A-4	0-5	65-80	55-70	50-65	30-50	15-25	NP-10
	11-28	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	28-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
Golconda	0-10	Very fine sandy loam.	ML, SM	A-4	0-10	95-100	90-100	75-95	45-65	20-30	NP-5
	10-23	Gravelly clay loam, clay loam, silty clay loam.	GC, CL	A-6, A-7	0	60-95	55-90	50-90	40-80	35-45	15-20
	23-36	Cemented layer---	---	---	---	---	---	---	---	---	---
	36-60	Stratified very gravelly sandy loam to extremely gravelly loamy coarse sand.	GP-GM, GM, GP	A-1	0	20-55	15-50	5-40	0-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
673*:											
Tenabo	0-5	Gravelly very fine sandy loam.	SM, GM	A-2, A-4	0-5	60-70	50-60	45-55	25-40	---	NP
	5-17	Silty clay loam, clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-90	60-90	50-80	30-40	10-20
	17-24	Indurated layer--	---	---	---	---	---	---	---	---	---
	24-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
675*:											
Misad	0-11	Gravelly very fine sandy loam.	SM, SM-SC, GM, GM-GC	A-2, A-4	0-5	65-80	55-70	50-65	30-50	15-25	NP-10
	11-28	Stratified fine sandy loam to very gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	5-10	45-65	40-60	25-40	10-25	15-25	NP-10
	28-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP-GM	A-1	5-10	40-55	20-40	10-30	5-10	---	NP
Orovada	0-11	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	20-30	NP-5
	11-24	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	24-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Snapp	0-9	Gravelly very fine sandy loam.	GM, SM	A-2	0	55-80	50-75	45-70	25-35	20-25	NP-5
	9-28	Gravelly clay, gravelly clay loam, clay.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	28-39	Gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7	0	55-80	50-75	45-70	35-60	35-45	15-25
	39-60	Extremely gravelly loamy sand, very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP
676*:											
Misad Variant	0-3	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	65-80	55-70	50-65	25-40	---	NP
	3-23	Very fine sandy loam.	SM, ML	A-4	0	80-100	75-100	70-95	45-60	---	NP
	23-60	Extremely gravelly sandy loam, extremely gravelly coarse sandy loam.	GP-GM, GM	A-1	5-10	20-35	15-25	10-20	5-15	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
676*:											
Dun Glen	0-3	Silt loam	ML	A-4	0	100	100	95-100	80-90	15-25	NP-5
	3-10	Silt loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-100	55-70	20-25	NP-5
	10-60	Fine sandy loam, very fine sandy loam, loam.	SM	A-4	0	90-100	85-100	70-85	35-50	20-25	NP-5
Misad Variant	0-3	Gravelly very fine sandy loam.	SM	A-2, A-4	0-5	65-80	55-70	50-65	25-40	---	NP
	3-23	Very fine sandy loam.	SM, ML	A-4	0	80-100	75-100	70-95	45-60	---	NP
	23-60	Extremely gravelly sandy loam, extremely gravelly coarse sandy loam.	GP-GM, GM	A-1	5-10	20-35	15-25	10-20	5-15	---	NP
680*:											
Bojo	0-3	Very gravelly loam.	GM-GC	A-2	10-25	40-60	35-55	30-50	20-35	20-25	5-10
	3-10	Gravelly clay loam, gravelly loam, clay loam.	GC, CL	A-6, A-7	0-10	70-90	65-85	60-80	45-70	35-45	15-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Trunk	0-3	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	3-30	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
683*:											
Bojo	0-3	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	50-60	40-50	30-40	20-25	5-10
	3-10	Clay loam, gravelly loam, gravelly clay loam.	GC, CL	A-6	0-10	70-90	65-85	60-80	45-70	30-40	10-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hoot	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
683*:											
Bojo	0-3	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	50-60	40-50	30-40	20-25	5-10
	3-10	Clay loam, gravelly loam, gravelly clay loam.	GC, CL	A-6	0-10	70-90	65-85	60-80	45-70	30-40	10-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
691*:											
Chilper	0-3	Cobbly very fine sandy loam.	ML, GM, SM	A-4	10-25	70-90	65-85	60-80	45-60	---	NP
	3-13	Very fine sandy loam.	ML	A-4	0-5	80-100	75-100	70-90	50-70	---	NP
	13-29	Clay loam, clay	CL, CH	A-7	0	80-100	75-100	65-80	50-70	40-55	15-30
	29-60	Extremely gravelly sandy loam.	GP, GP-GM	A-1	0-10	15-35	10-25	5-20	0-10	---	NP
Trocken	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
Jerval	0-6	Cobbly very fine sandy loam.	ML	A-4	25-40	90-100	80-90	75-90	50-60	---	NP
	6-22	Gravelly clay loam, gravelly silty clay loam.	CL	A-6	0-5	65-85	60-75	55-75	50-65	35-40	15-20
	22-60	Very gravelly sandy loam, very gravelly fine sandy loam.	GM	A-1	0-10	45-60	35-50	25-45	15-25	---	NP
701*:											
Atlow	0-6	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	6-15	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wiskan	0-9	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	0-15	40-60	30-50	25-50	20-40	20-30	NP-10
	9-35	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	35-39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
703*:											
Atlow	0-6	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	6-15	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Daick	0-4	Cobbly clay loam	CL	A-7	15-25	75-95	70-90	65-85	60-75	40-50	20-30
	4	Weathered bedrock	---	---	---	---	---	---	---	---	---
Atlow	0-6	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	6-15	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
704*:											
Atlow	0-6	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	6-15	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hoot	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow	0-6	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	6-15	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
750*:											
Snapp	0-9	Very fine sandy loam.	ML, SM	A-4	0	95-100	90-100	75-95	45-65	20-25	NP-5
	9-28	Clay, gravelly clay, gravelly clay loam.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	28-39	Gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7	0	55-80	50-75	45-70	35-60	35-45	15-25
	39-60	Extremely gravelly loamy sand, very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
751*:											
Snapp	0-9	Loam	ML	A-4	0	95-100	90-100	75-95	55-75	20-25	NP-5
	9-28	Clay, gravelly clay, gravelly clay loam.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	28-39	Gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7	0	55-80	50-75	45-70	35-60	35-45	15-25
	39-60	Extremely gravelly loamy sand, very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP
Sodhouse	0-5	Very fine sandy loam.	ML, SM	A-4	0	90-100	90-100	75-95	45-65	15-25	NP-5
	5-14	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	80-100	75-90	65-85	35-55	15-25	NP-5
	14-29	Indurated layer--	---	---	---	---	---	---	---	---	---
	29-60	Extremely gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	5-20	25-60	15-50	10-40	5-25	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
752*:											
Snapp	0-9	Very fine sandy loam.	ML, SM	A-4	0	95-100	90-100	75-95	45-65	20-25	NP-5
	9-28	Clay, gravelly clay, gravelly clay loam.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	28-39	Gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7	0	55-80	50-75	45-70	35-60	35-45	15-25
	39-60	Extremely gravelly loamy sand, very gravelly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP
Orovada	0-11	Very fine sandy loam.	ML	A-4	0	95-100	90-100	80-95	60-75	20-30	NP-5
	11-24	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	24-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
812*:											
Boton	0-3	Silt loam	ML	A-4	0	100	100	95-100	75-95	25-35	NP-5
	3-60	Silt loam	CL, ML	A-4, A-6	0	100	100	95-100	80-95	30-40	5-15
Playas.											
813*:											
Batan	0-3	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	NP-5
	3-60	Stratified silt loam to silty clay.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
Wendane	0-11	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	75-90	25-35	5-10
	11-60	Silty clay loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	25-35	5-10
Valmy	0-3	Silt loam	ML	A-4	0	95-100	90-100	85-100	50-65	15-25	NP-5
	3-60	Stratified very fine sandy loam to gravelly coarse sandy loam.	SM	A-1, A-2, A-4	0-5	80-95	75-90	40-70	20-45	15-25	NP-5
814 Batan	0-3	Silt loam	ML	A-4	0	100	100	95-100	85-95	30-35	NP-5
	3-60	Stratified silt loam to silty clay.	CL	A-6	0	100	100	95-100	85-95	30-40	15-25
823*:											
Trocken	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
823*:											
Bluewing	0-5	Very gravelly loamy sand.	SP-SM	A-1	10-25	70-85	35-45	15-30	5-10	---	NP
	5-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM, GP	A-1	0-25	40-50	20-35	10-15	0-10	---	NP
825 Trocken	0-3	Very gravelly very fine sandy loam.	GM	A-1, A-2	0-25	40-55	35-50	30-50	10-35	15-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC, GP-GM, GM	A-2, A-1	5-40	20-60	15-40	10-35	5-25	20-30	NP-10
826*:											
Trocken	0-3	Very fine sandy loam.	ML	A-4	0-5	95-100	85-100	75-100	50-70	15-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-20	20-60	15-50	10-35	5-25	20-30	5-10
Ragtown	0-7	Loam	ML, CL-ML	A-4	0	95-100	95-100	85-95	60-75	25-35	5-10
	7-20	Stratified sandy clay loam to silty clay loam.	CL	A-6, A-7	0	100	100	80-95	50-75	35-45	15-20
	20-60	Stratified silty clay loam to clay.	CL, CH, MH	A-7	0	100	100	90-100	75-95	40-55	20-25
827 Trocken	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
831*:											
Benin	0-9	Silt loam	CL-ML, ML	A-4	0	100	95-100	75-90	70-85	25-35	5-10
	9-60	Clay, silty clay	CL, CH, MH	A-7	0	100	100	90-100	85-95	45-55	20-25
Yobe	0-14	Silt loam	CL, CL-ML	A-6, A-4	0	100	100	95-100	80-95	20-30	5-15
	14-60	Stratified very fine sandy loam to silty clay loam.	CL	A-6	0	100	100	95-100	75-95	25-30	10-15
Wendane	0-11	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	75-90	25-35	5-10
	11-60	Silty clay loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	25-35	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
900*:											
Roca	0-6	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	6-34	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	34-38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wiskan	0-9	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	0-15	40-60	30-50	25-50	20-40	20-30	NP-10
	9-35	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	35-39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-9	Gravelly loam	SM-SC, CL-ML	A-4	5-10	70-80	60-75	50-65	40-55	25-30	5-10
	9-25	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	25-29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
901*:											
Roca	0-6	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	6-34	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	34-38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-9	Gravelly loam	SM-SC, CL-ML	A-4	5-10	70-80	60-75	50-65	40-55	25-30	5-10
	9-25	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	25-29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
902*:											
Roca	0-6	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	6-34	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	34-38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-9	Gravelly loam	SM-SC, CL-ML	A-4	5-10	70-80	60-75	50-65	40-55	25-30	5-10
	9-25	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	25-29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
902*:											
Sumya	0-4	Very cobbly clay loam.	GC, CL	A-6, A-7	25-45	50-70	45-65	40-60	35-55	35-45	15-20
	4-9	Very gravelly clay loam, very gravelly clay.	GC	A-2	0-15	35-55	30-50	25-40	20-35	40-50	20-25
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
903*:											
Roca	0-6	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	6-34	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	34-38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burnborough	0-13	Very gravelly loam.	SC, SM-SC	A-2	5-10	65-75	40-55	30-45	25-35	20-35	5-15
	13-60	Very gravelly loam, very gravelly clay loam.	GC, SC	A-2	15-25	55-65	35-60	20-35	15-30	25-40	10-20
Rock outcrop.											
905*, 906*:											
Roca	0-6	Very cobbly loam	CL	A-6	50-60	85-100	75-85	70-80	50-60	25-35	10-15
	6-34	Very gravelly clay loam, very gravelly clay.	GC, SC	A-2	0-10	60-75	30-50	25-45	20-35	45-60	20-30
	34-38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan Variant	0-6	Gravelly silt loam.	CL-ML, SM-SC, GM-GC	A-4	0-5	65-85	55-75	45-75	40-70	20-25	5-10
	6-34	Gravelly loam	CL, SC, GC	A-6	0-5	65-85	55-75	40-70	35-65	25-35	10-15
	34-60	Very gravelly loam, very gravelly clay loam.	GC, GM	A-2, A-6, A-7	0-10	45-60	35-50	25-45	25-40	35-45	10-20
911*:											
Tenabo	0-5	Cobbly very fine sandy loam.	ML	A-4	25-40	85-95	75-90	70-85	55-70	---	NP
	5-17	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	17-24	Indurated layer--	---	---	---	---	---	---	---	---	---
	24-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Daick	0-4	Stony clay loam	CL	A-7	10-15	70-95	65-90	60-90	50-80	40-50	20-30
	4	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
911*:											
Oxcorel	0-8	Gravelly very fine sandy loam.	SM, GM	A-4	0-10	60-85	55-75	45-70	35-50	15-25	NP-5
	8-34	Clay, clay loam	CL, CH	A-7	0-5	85-95	80-90	75-85	65-80	40-55	20-30
	34-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1	0-15	30-60	25-50	20-40	15-25	15-25	NP-5
930*:											
Bubus	0-13	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	13-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Benin	0-9	Silt loam	CL-ML, ML	A-4	0	100	95-100	75-90	70-85	25-35	5-10
	9-60	Clay, silty clay	CL, CH, MH	A-7	0	100	100	90-100	85-95	45-55	20-25
Wendane	0-11	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	75-90	25-35	5-10
	11-60	Silty clay loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	25-35	5-10
931*:											
Bubus	0-13	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	13-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
Valmy	0-3	Loamy fine sand	SM	A-2	0	95-100	90-100	85-100	20-30	---	NP
	3-60	Stratified very fine sandy loam to gravelly coarse sandy loam.	SM	A-4, A-2, A-1	0-5	80-95	75-90	40-70	20-45	15-25	NP-5
932 Bubus	0-13	Very fine sandy loam.	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	13-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	90-100	80-90	50-60	25-30	NP-5
950*:											
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Xine	0-10	Gravelly loam	SM	A-2, A-4	0-5	65-80	50-75	45-60	30-45	15-25	NP-5
	10-38	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
950*:											
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
953*:											
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bojo	0-3	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	50-60	40-50	30-40	20-25	5-10
	3-10	Clay loam, gravelly loam, gravelly clay loam.	GC, CL	A-6	0-10	70-90	65-85	60-80	45-70	30-40	10-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
954*:											
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Xine	0-10	Gravelly silt loam.	SM	A-2, A-4	0-5	65-80	50-75	45-60	30-45	15-25	NP-5
	10-38	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
955*:											
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Mulhop	0-6	Very gravelly loam.	GM-GC	A-2, A-4	0-15	40-55	35-50	30-45	25-40	20-30	5-10
	6-17	Very gravelly loam, very gravelly silt loam.	GM-GC, GC	A-2, A-4, A-6	0	35-55	30-50	25-45	20-40	25-35	5-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
956*:											
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Linrose	0-10	Very gravelly loam.	GM	A-2, A-4, A-1	0-15	40-50	35-50	30-45	20-40	15-25	NP-5
	10-23	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	23-27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Iver	0-12	Gravelly silt loam.	GM, ML	A-4	0-10	65-80	55-75	45-60	40-55	---	NP
	12-20	Silt loam	CL-ML	A-4	0	80-100	75-100	70-80	55-65	25-30	5-10
	20-31	Gravelly silt loam, gravelly loam.	CL-ML, SM-SC	A-4	0-10	70-80	65-75	50-60	35-55	25-30	5-10
	31-60	Very cobbly loam, very cobbly very fine sandy loam.	GM-GC, SM-SC, CL-ML	A-2, A-4	45-55	55-90	50-85	45-75	25-55	25-30	5-10

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
957*:											
Puffer	0-4	Very flaggy loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	4-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow	0-4	Very flaggy loam	GM-GC, GC	A-2, A-4, A-6	30-45	50-70	45-65	35-60	25-45	25-35	5-15
	4-15	Very gravelly clay loam.	GC	A-2, A-6	5-15	45-60	35-50	30-45	25-40	30-40	10-15
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puffer	0-4	Very flaggy loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	4-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
960*:											
Findout	0-4	Very gravelly loam.	SM, GM	A-1, A-2	5-10	55-70	40-55	25-35	20-30	20-25	NP-5
	4-8	Very gravelly clay loam, very gravelly loam.	GC	A-2	0-5	45-60	35-50	25-40	20-35	30-40	10-15
	8-14	Very gravelly loam.	GM-GC	A-2	0-5	45-60	35-55	25-40	20-35	25-30	5-10
	14-18	Weathered bedrock	---	---	---	---	---	---	---	---	---
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
980 Mazuma	0-10	Very fine sandy loam.	ML	A-4	0	95-100	85-100	70-90	50-65	20-25	NP-5
	10-60	Stratified gravelly coarse sand to silt loam.	SM	A-4	0	95-100	80-100	70-90	35-50	20-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
981----------	0-13	Fine sandy loam	SM	A-2, A-4	0	100	100	70-90	30-50	20-25	NP-5
Mazuma	13-22	Sandy loam, fine sandy loam.	SM	A-4, A-2	0	100	100	90-100	30-50	20-25	NP-5
	22-60	Stratified silt loam to gravelly coarse sand.	SM, ML	A-2, A-4	0	75-100	70-85	50-75	25-55	20-25	NP-5
983*:											
Mazuma----------	0-13	Silt loam--------	ML	A-4	0	100	100	90-100	70-80	20-25	NP-5
	13-22	Sandy loam, fine sandy loam.	SM	A-4, A-2	0	100	100	90-100	30-50	20-25	NP-5
	22-60	Stratified silt loam to gravelly coarse sand.	SM, ML	A-2, A-4	0	75-100	70-85	50-75	25-55	20-25	NP-5
Swingler--------	0-6	Silt loam--------	CL-ML, ML	A-4	0	100	100	95-100	80-95	25-35	5-10
	6-60	Silt loam, very fine sandy loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-80	25-35	5-15
Trocken---------	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
984*:											
Mazuma----------	0-13	Fine sandy loam	SM	A-2, A-4	0	100	100	70-90	30-50	20-25	NP-5
	13-22	Sandy loam, fine sandy loam.	SM	A-4, A-2	0	100	100	90-100	30-50	20-25	NP-5
	22-60	Stratified silt loam to gravelly coarse sand.	SM, ML	A-2, A-4	0	75-100	70-85	50-75	25-55	20-25	NP-5
Bluewing--------	0-5	Very gravelly sandy loam.	GM	A-1	0-10	40-60	30-50	20-40	15-25	---	NP
	5-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM	A-1	5-25	30-40	25-35	15-25	5-10	---	NP
Woolsey---------	0-9	Gravelly fine sandy loam.	GM, SM	A-2	0	55-90	50-75	45-60	25-35	---	NP
	9-14	Gravelly sandy loam.	GM-GC, SM-SC, GM, SM	A-2	0	55-90	50-75	40-50	25-35	20-30	NP-10
	14-60	Stratified sandy loam to gravelly sandy loam.	GM, ML, SM	A-2, A-4	0	55-90	50-85	40-70	30-55	---	NP
985*:											
Mazuma----------	0-13	Silt loam--------	ML	A-4	0	100	100	90-100	70-80	20-25	NP-5
	13-22	Sandy loam, fine sandy loam.	SM	A-4, A-2	0	100	100	90-100	30-50	20-25	NP-5
	22-60	Stratified silt loam to gravelly coarse sand.	SM, ML	A-2, A-4	0	75-100	70-85	50-75	25-55	20-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
985*:											
Toulon	0-5	Very gravelly loam.	GM, SM	A-1, A-2	0-10	55-70	40-50	30-45	20-35	---	NP
	5-18	Very gravelly sandy loam, very gravelly loam, very gravelly coarse sandy loam.	GM	A-1, A-2	0-5	40-60	25-40	15-35	10-30	---	NP
	18-60	Stratified gravelly coarse sand to extremely cobbly coarse sand.	GP, GP-GM	A-1	25-50	40-50	25-40	5-20	0-10	---	NP
Chumall	0-7	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	85-100	25-35	5-15
	7-14	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	85-100	25-35	5-15
	14-60	Stratified very fine sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	85-100	25-35	5-15
986*:											
Mazuma	0-10	Very fine sandy loam.	ML	A-4	0	95-100	85-100	70-90	50-65	20-25	NP-5
	10-60	Stratified gravelly coarse sand to silt loam.	SM	A-4	0	95-100	80-100	70-90	35-50	20-25	NP-5
Trocken	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
987*:											
Mazuma	0-10	Very fine sandy loam.	ML	A-4	0	95-100	85-100	70-90	50-65	20-25	NP-5
	10-60	Stratified gravelly coarse sand to silt loam.	SM	A-4	0	95-100	80-100	70-90	35-50	20-25	NP-5
Yipor	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	5-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
988 Mazuma	0-10	Very fine sandy loam.	ML	A-4	0	95-100	85-100	70-90	50-65	20-25	NP-5
	10-60	Stratified gravelly coarse sand to silt loam.	SM	A-4	0	95-100	80-100	70-90	35-50	20-25	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
990---------- Argenta	0-6	Very fine sandy loam.	ML	A-4	0	100	100	95-100	70-80	15-25	NP-5
	6-36	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	90-100	80-95	50-65	---	NP
	36-60	Gravelly sandy loam.	SM	A-1, A-2	0	95-100	55-65	35-45	20-30	15-25	NP-5
1020---------- Wholan	0-5	Very fine sandy loam.	ML	A-4	0	100	100	95-100	75-80	15-25	NP-5
	5-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
1030*:											
Wendane----------	0-11	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	75-90	25-35	5-10
	11-60	Silty clay loam, silt loam.	ML, CL-ML	A-4	0	100	100	95-100	80-95	25-35	5-10
Yobe----------	0-14	Silt loam--------	CL, CL-ML	A-6, A-4	0	100	100	95-100	80-95	20-30	5-15
	14-60	Stratified very fine sandy loam to silty clay loam.	CL	A-6	0	100	100	95-100	75-95	25-30	10-15
1070*:											
Hoot----------	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Burrita----------	0-8	Very cobbly loam	GM-GC	A-4	25-40	60-70	55-65	50-60	35-45	15-25	5-10
	8-17	Very cobbly clay, very stony clay loam, very gravelly clay loam.	GC, SC	A-2, A-7	10-55	35-75	30-55	25-50	20-45	40-55	20-30
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bojo----------	0-3	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	50-60	40-50	30-40	20-25	5-10
	3-10	Clay loam, gravelly loam, gravelly clay loam.	GC, CL	A-6	0-10	70-90	65-85	60-80	45-70	30-40	10-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1071*:											
Hoot	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wiskan	0-9	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	0-15	40-60	30-50	25-50	20-40	20-30	NP-10
	9-35	Very gravelly clay loam, very gravelly loam, extremely gravelly clay loam.	GC	A-2	10-25	40-55	30-45	25-45	20-35	30-40	10-20
	35-39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Atlow	0-6	Very gravelly loam.	GC, SC	A-2, A-6	0-15	35-85	30-50	20-45	15-40	25-35	10-15
	6-15	Very gravelly clay loam, very cobbly clay loam.	GC	A-2, A-6, A-7	0-45	35-60	25-50	20-50	15-40	35-45	15-20
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1073*:											
Hoot	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bojo	0-3	Very cobbly loam	GM-GC	A-2, A-4	30-50	55-65	50-60	40-50	30-40	20-25	5-10
	3-10	Clay loam, gravelly loam, gravelly clay loam.	GC, CL	A-6	0-10	70-90	65-85	60-80	45-70	30-40	10-20
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1073*:											
Hoot	0-4	Very cobbly loam	GM-GC	A-4	25-45	50-70	45-65	40-55	35-50	25-30	5-10
	4-14	Extremely gravelly loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	5-25	30-45	20-35	20-30	20-30	35-40	15-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1090*:											
Bojo Variant	0-5	Very cobbly loam	GM-GC, CL-ML	A-2, A-4	30-50	50-75	45-70	40-60	30-55	20-30	5-10
	5-9	Very gravelly loam, gravelly clay loam.	GC	A-6, A-2, A-7	0-5	30-55	25-50	20-45	15-40	35-45	15-20
	9-18	Clay	CH	A-7	0	85-100	80-100	75-100	65-90	50-60	25-30
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Schamp	0-6	Loam	ML, CL-ML	A-4	0-5	90-100	80-95	70-85	50-75	25-35	5-10
	6-34	Clay, clay loam	CL, CH	A-7	0-5	90-100	80-100	75-100	70-95	45-65	20-35
	34-60	Very cobbly loam, very gravelly sandy clay loam.	GC, GM-GC, SC, SM-SC	A-2, A-4, A-6	25-60	50-70	45-60	40-55	30-45	20-35	5-15
Trunk	0-3	Very cobbly loam	GM-GC, SM-SC, SC, GC	A-4, A-6	30-45	55-80	50-75	45-70	35-50	25-35	5-15
	3-30	Gravelly clay, gravelly clay loam.	CL, GC, CH	A-7	0-10	55-85	50-80	45-75	40-65	40-55	20-30
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1111	0-4	Silt loam	ML	A-4	0	100	100	90-100	85-100	20-30	NP-5
Yipor	4-41	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	41-60	Stratified fine sand to loamy fine sand.	SM	A-2	0	95-100	90-100	85-100	20-35	---	NP
1112	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
Yipor	5-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
1113*:											
Yipor	0-5	Silt loam	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
	5-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
Badland.											
1114	0-8	Silt loam	ML	A-4	0	100	100	95-100	85-100	20-30	NP-5
Yipor	8-36	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5
	36-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	75-100	20-30	NP-5

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1121*:											
Genegraf	0-6	Very gravelly very fine sandy loam.	GM	A-1, A-2	0-10	30-50	25-45	25-45	15-30	15-25	NP-5
	6-24	Clay loam, sandy clay loam, gravelly clay loam.	SC	A-6	0-5	70-90	60-85	50-70	35-50	30-40	10-20
	24-60	Very gravelly fine sandy loam, very gravelly sandy loam.	SM, GM	A-1	0-10	45-60	35-50	25-45	10-25	15-25	NP-5
Chilper	0-3	Gravelly very fine sandy loam.	GM, SM	A-4	5-10	60-80	55-75	50-70	35-50	---	NP
	3-13	Very fine sandy loam.	ML	A-4	0-5	80-100	75-100	70-90	50-70	---	NP
	13-29	Clay loam, clay	CL, CH	A-7	0	80-100	75-100	65-80	50-70	40-55	15-30
	29-60	Extremely gravelly sandy loam.	GP, GP-GM, GM	A-1	0-10	15-35	10-25	5-20	0-15	---	NP
Bluewing	0-13	Very gravelly sandy loam.	GM	A-1	0-10	40-60	30-50	20-40	15-25	---	NP
	13-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM	A-1	5-25	30-40	25-35	15-25	5-10	---	NP
1122*:											
Genegraf	0-6	Very gravelly very fine sandy loam.	GM	A-1, A-2	0-10	30-50	25-45	25-45	15-30	15-25	NP-5
	6-24	Clay loam, sandy clay loam, gravelly clay loam.	SC	A-6	0-5	70-90	60-85	50-70	35-50	30-40	10-20
	24-60	Very gravelly fine sandy loam, very gravelly sandy loam.	SM, GM	A-1	0-10	45-60	35-50	25-45	10-25	15-25	NP-5
Trocken	0-3	Very gravelly very fine sandy loam.	GM, GM-GC	A-1, A-2	0-25	40-55	35-50	30-50	10-35	15-30	NP-10
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
Bluewing	0-5	Very gravelly loamy sand.	SP-SM	A-1	10-25	70-85	35-45	15-30	5-10	---	NP
	5-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM, GP	A-1	0-25	40-50	20-35	10-15	0-10	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1130*:											
Cleaver	0-5	Gravelly loam	SM, SM-SC, ML, CL-ML	A-4	0-5	70-85	60-75	55-70	35-60	15-30	NP-10
	5-17	Gravelly clay loam, gravelly loam.	SC, CL	A-6, A-7	0-5	75-85	50-75	45-70	40-60	35-50	15-25
	17-24	Indurated layer--	---	---	---	---	---	---	---	---	---
	24-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP, GP-GM	A-1	10-25	15-30	10-25	5-15	0-10	---	NP
Trocken	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
Bluewing	0-13	Very gravelly loamy sand.	SP-SM	A-1	10-25	70-85	35-45	15-30	5-10	---	NP
	13-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM, GP	A-1	0-25	40-50	20-35	10-15	0-10	---	NP
1140*:											
Layview	0-7	Very gravelly loam.	GM-GC	A-2	10-15	40-55	35-50	25-40	20-30	25-30	5-10
	7-14	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	35-60	30-55	25-45	20-40	30-40	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tusel	0-19	Very cobbly loam	GM, SM, GM-GC, SM-SC	A-4, A-2	45-65	50-80	45-75	40-65	25-40	20-30	NP-10
	19-42	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	15-45	30-50	25-40	20-35	15-30	30-40	10-20
	42-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1140*:											
Layview	0-7	Very gravelly loam.	GM-GC	A-2	10-15	40-55	35-50	25-40	20-30	25-30	5-10
	7-14	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	35-60	30-55	25-45	20-40	30-40	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1160*:											
Slaw	0-3	Silt loam	CL-ML	A-4	0	100	100	95-100	80-90	15-25	5-10
	3-60	Stratified very fine sandy loam to silty clay.	ML, CL	A-6, A-7	0	100	100	95-100	85-95	35-45	10-20
Ragtown	0-7	Fine sandy loam	SM, ML	A-4	0	90-95	85-95	70-80	35-55	20-25	NP-5
	7-20	Stratified sandy clay loam to silty clay loam.	CL	A-6, A-7	0	100	100	80-95	50-75	35-45	15-20
	20-60	Stratified silty clay loam to clay.	CL, CH, MH	A-7	0	100	100	90-100	75-95	40-55	20-25
1200*:											
Bluewing	0-5	Very gravelly sandy loam.	GM	A-1	0-10	40-60	30-50	20-40	15-25	---	NP
	5-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM	A-1	5-25	30-40	25-35	15-25	5-10	---	NP
Bluewing	0-5	Very gravelly sandy loam.	GM	A-1	0-10	40-60	30-50	20-40	15-25	---	NP
	5-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM	A-1	5-25	30-40	25-35	15-25	5-10	---	NP
Daick	0-4	Gravelly clay	CH, CL, GC	A-7	0-5	65-80	60-75	50-75	45-70	45-65	25-40
	4	Weathered bedrock	---	---	---	---	---	---	---	---	---
1201 Bluewing	0-5	Gravelly sandy loam.	SM	A-1, A-2	0-10	60-80	55-75	30-60	20-35	---	NP
	5-60	Stratified very gravelly sand to extremely gravelly loamy coarse sand.	GP-GM	A-1	5-25	30-40	25-35	15-25	5-10	---	NP
1210*:											
Daick	0-4	Gravelly clay loam.	CL, GC	A-7	0-5	65-80	60-75	50-75	45-70	40-50	20-30
	4	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1210*:											
Rezave	0-3	Extremely stony very fine sandy loam.	SM	A-4	35-45	90-100	85-95	60-80	35-50	20-25	NP-5
	3-14	Clay, clay loam, stony clay.	CL, CH	A-7	5-30	90-100	90-100	80-100	65-95	40-60	15-35
	14-16	Very gravelly clay, gravelly clay loam.	SC, CL	A-7	5-10	80-90	50-70	50-70	35-60	40-50	15-25
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rubble land.											
1230*:											
Knott	0-4	Gravelly very fine sandy loam.	SM	A-2, A-4	0-10	65-80	60-75	50-65	30-45	20-25	NP-5
	4-18	Clay, gravelly clay, gravelly clay loam.	GC, CL, CH	A-7	0-5	60-95	55-90	50-80	40-70	40-55	20-30
	18-34	Indurated layer--	---	---	---	---	---	---	---	---	---
	34-60	Very gravelly coarse sandy loam, very gravelly sandy loam, very gravelly loamy sand.	GM	A-1	5-15	35-55	30-50	20-35	10-20	---	NP
Sodhouse	0-2	Gravelly very fine sandy loam.	SM	A-2, A-4	0-10	65-75	55-65	45-65	30-40	15-25	NP-5
	2-14	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	80-100	75-90	65-85	35-55	15-25	NP-5
	14-29	Indurated layer--	---	---	---	---	---	---	---	---	---
	29-60	Extremely gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	5-20	25-60	15-50	10-40	5-25	---	NP
Wholan	0-5	Silt loam	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	5-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
1231*:											
Knott	0-4	Gravelly very fine sandy loam.	SM	A-2, A-4	0-10	65-80	60-75	50-65	30-45	20-25	NP-5
	4-18	Clay, gravelly clay, gravelly clay loam.	GC, CL, CH	A-7	0-5	60-95	55-90	50-80	40-70	40-55	20-30
	18-34	Indurated layer--	---	---	---	---	---	---	---	---	---
	34-60	Very gravelly coarse sandy loam, very gravelly sandy loam, very gravelly loamy sand.	GM	A-1	5-15	35-55	30-50	20-35	10-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1231*:											
Sodhouse	0-2	Gravelly very fine sandy loam.	SM	A-2, A-4	0-10	65-75	55-65	45-65	30-40	15-25	NP-5
	2-14	Fine sandy loam, very fine sandy loam.	ML, SM	A-4	0	80-100	75-90	65-85	35-55	15-25	NP-5
	14-29	Indurated layer--	---	---	---	---	---	---	---	---	---
	29-60	Extremely gravelly sandy loam, very gravelly loamy sand.	GM, GP-GM	A-1	5-20	25-60	15-50	10-40	5-25	---	NP
Cortez	0-8	Gravelly very fine sandy loam.	GM, ML	A-4	0-10	65-85	55-75	50-70	35-55	15-25	NP-5
	8-33	Clay, silty clay, gravelly clay.	CH	A-7	0	80-95	60-85	55-80	55-75	50-60	35-45
	33-46	Indurated layer--	---	---	---	---	---	---	---	---	---
	46-60	Very gravelly coarse sandy loam, very cobbly loamy coarse sand.	GP-GM, GM, SP-SM, SM	A-1	15-50	50-70	30-60	15-30	5-15	---	NP
1232*:											
Knott	0-4	Cobbly very fine sandy loam.	SM	A-4	15-30	75-95	70-90	60-80	35-50	20-25	NP-5
	4-18	Clay, gravelly clay, gravelly clay loam.	GC, CL, CH	A-7	0-5	60-95	55-90	50-80	40-70	40-55	20-30
	18-34	Indurated layer--	---	---	---	---	---	---	---	---	---
	34-60	Very gravelly coarse sandy loam, very gravelly sandy loam, very gravelly loamy sand.	GM	A-1	5-15	35-55	30-50	20-35	10-20	---	NP
Snapp	0-9	Cobbly very fine sandy loam.	SM	A-2, A-4	30-40	75-90	70-85	65-80	30-50	15-25	NP-5
	9-28	Clay, gravelly clay, gravelly clay loam.	CH, GC	A-7	0	55-100	50-90	45-85	35-70	50-75	30-50
	28-39	Gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7	0	55-80	50-75	45-70	35-60	35-45	15-25
	39-60	Extremely gravelly loamy sand, very gravelly sandy loam.	GP-GM, GM, SP-SM, SM	A-1	0	25-60	15-50	10-40	5-15	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1232*:											
Knott	0-4	Cobbly very fine sandy loam.	SM	A-4	15-30	75-95	70-90	60-80	35-50	20-25	NP-5
	4-18	Clay, gravelly clay, gravelly clay loam.	GC, CL, CH	A-7	0-5	60-95	55-90	50-80	40-70	40-55	20-30
	18-34	Indurated layer--	---	---	---	---	---	---	---	---	---
	34-60	Very gravelly coarse sandy loam, very gravelly sandy loam, very gravelly loamy sand.	GM	A-1	5-15	35-55	30-50	20-35	10-20	---	NP
1270*:											
Gol	0-7	Very cobbly sandy loam.	SM	A-1, A-2	55-65	80-95	70-85	40-50	20-35	20-25	NP-5
	7-18	Very gravelly clay loam, very gravelly sandy clay loam, very gravelly loam.	GM-GC, GC	A-2	0-10	55-65	40-50	25-45	20-35	25-40	5-15
	18	Weathered bedrock	---	---	---	---	---	---	---	---	---
Say	0-9	Stony loam-------	SM, ML	A-4	5-15	85-100	80-95	60-75	45-55	20-25	NP-5
	9-19	Cobbly loam, cobbly sandy clay loam, gravelly sandy clay loam.	SC	A-2, A-6	5-30	70-100	50-75	40-65	25-50	25-35	10-15
	19-25	Gravelly sandy loam, gravelly coarse sandy loam, very gravelly loamy sand.	SM	A-1	0-15	65-80	45-70	20-30	10-25	15-25	NP-5
	25	Weathered bedrock	---	---	---	---	---	---	---	---	---
1271*, 1272*:											
Gol	0-7	Very bouldery sandy loam.	SM	A-2	40-50	75-85	60-70	40-50	25-35	20-25	NP-5
	7-18	Very gravelly clay loam, very gravelly sandy clay loam, very gravelly loam.	GM-GC, GC	A-2	0-10	55-65	40-50	25-45	20-35	25-40	5-15
	18	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1271*, 1272*:											
Say	0-9	Very bouldery loam.	SM	A-4	10-30	80-100	70-90	50-70	40-50	20-25	NP-5
	9-19	Cobbly loam, cobbly sandy clay loam, gravelly sandy clay loam.	SC	A-2, A-6	5-30	70-100	50-75	40-65	25-50	25-35	10-15
	19-25	Gravelly sandy loam, gravelly coarse sandy loam, very gravelly loamy sand.	SM	A-1	0-15	65-80	45-70	20-30	10-25	15-25	NP-5
	25	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1280*:											
Gwena	0-9	Very fine sandy loam.	ML	A-4	0-5	85-100	80-100	75-95	55-75	---	NP
	9-19	Clay loam, loam	CL	A-7, A-6	0-10	75-100	75-100	65-85	50-70	30-45	10-20
	19-23	Indurated layer--	---	---	---	---	---	---	---	---	---
Enko	0-6	Fine sandy loam	SM-SC	A-4	0	95-100	85-100	60-75	35-50	20-30	5-10
	6-29	Loam, sandy loam, fine sandy loam.	SM-SC, CL-ML	A-4	0	95-100	85-100	60-90	35-70	20-30	5-10
	29-60	Sandy loam, fine sandy loam, loam.	SM-SC, CL-ML	A-2, A-4	0	85-100	75-100	60-90	30-65	20-25	5-10
Frewa	0-8	Loamy fine sand	SM	A-2, A-4	0	90-100	85-100	70-95	25-50	---	NP
	8-18	Loamy fine sand, loamy sand.	SM	A-2, A-4, A-1	0	90-100	85-100	45-90	15-50	---	NP
	18-60	Loamy fine sand, loamy sand, gravelly loamy sand.	SM	A-2, A-4, A-1	0	90-100	60-100	20-90	10-50	---	NP
1290*:											
Slaven	0-5	Very cobbly loam	GM	A-4	30-50	55-75	50-70	40-60	35-50	25-30	NP-5
	5-36	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0-15	25-35	15-25	15-20	10-20	40-50	25-35
	36-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Linrose	0-10	Very gravelly loam.	GM	A-2, A-4, A-1	0-15	40-50	35-50	30-45	20-40	15-25	NP-5
	10-23	Very gravelly loam, very gravelly sandy loam.	GC, GM-GC	A-2	0-15	40-60	30-50	25-45	15-35	25-35	5-15
	23-27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1290*:											
Iver	0-4	Stony silt loam	ML	A-4	5-10	95-100	90-95	80-90	70-80	20-25	NP-5
	4-20	Silt loam	CL-ML	A-4	0	80-100	75-100	70-80	55-65	25-30	5-10
	20-31	Gravelly silt loam, gravelly loam.	CL-ML, SM-SC	A-4	0-10	70-80	65-75	50-60	35-55	25-30	5-10
	31-60	Very cobbly loam, very cobbly very fine sandy loam.	GM-GC, SM-SC, CL-ML	A-2, A-4	45-55	55-90	50-85	45-75	25-55	25-30	5-10
1291*:											
Slaven	0-5	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0	55-75	50-65	45-55	25-40	---	NP
	5-36	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0-15	25-35	15-25	15-20	10-20	40-50	25-35
	36-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Iver	0-4	Gravelly silt loam.	GM, ML	A-4	0-10	65-80	55-75	45-60	40-55	---	NP
	4-20	Silt loam	CL-ML	A-4	0	80-100	75-100	70-80	55-65	25-30	5-10
	20-31	Gravelly silt loam, gravelly loam.	CL-ML, SM-SC	A-4	0-10	70-80	65-75	50-60	35-55	25-30	5-10
	31-60	Very cobbly loam, very cobbly very fine sandy loam.	GM-GC, SM-SC, CL-ML	A-2, A-4	45-55	55-90	50-85	45-75	25-55	25-30	5-10
Cleavage	0-10	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	50-70	30-50	25-45	20-40	25-35	5-15
	10-17	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1292*:											
Slaven	0-5	Very cobbly loam	GM	A-4	30-50	55-75	50-70	40-60	35-50	25-30	NP-5
	5-36	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0-15	25-35	15-25	15-20	10-20	40-50	25-35
	36-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1292*:											
Iver	0-4	Stony silt loam	ML	A-4	5-10	95-100	90-95	80-90	70-80	20-25	NP-5
	4-20	Silt loam	CL-ML	A-4	0	80-100	75-100	70-80	55-65	25-30	5-10
	20-31	Gravelly silt loam, gravelly loam.	CL-ML, SM-SC	A-4	0-10	70-80	65-75	50-60	35-55	25-30	5-10
	31-60	Very cobbly loam, very cobbly very fine sandy loam.	GM-GC, SM-SC, CL-ML	A-2, A-4	45-55	55-90	50-85	45-75	25-55	25-30	5-10
Rock outcrop.											
1320*:											
Alyan	0-11	Extremely stony loam.	SM, ML	A-4	25-45	80-95	75-90	65-75	40-55	20-25	NP-5
	11-33	Gravelly clay	GC, CL, CH	A-7	0-10	60-80	55-75	50-70	40-60	45-55	20-30
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Chen	0-10	Very stony loam	GM-GC, GM, CL-ML, ML	A-4	15-35	65-95	60-90	50-80	35-65	25-35	5-10
	10-19	Very gravelly clay, extremely gravelly clay, very cobbly clay.	GC, SC	A-2, A-7	15-45	40-75	30-50	30-50	25-45	40-55	15-30
	19-23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1321*:											
Alyan	0-11	Extremely stony loam.	SM, ML	A-4	25-45	80-95	75-90	65-75	40-55	20-25	NP-5
	11-33	Gravelly clay	GC, CL, CH	A-7	0-10	60-80	55-75	50-70	40-60	45-55	20-30
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Slaven	0-5	Very cobbly loam	GM	A-4	30-50	55-75	50-70	40-60	35-50	25-30	NP-5
	5-36	Extremely gravelly clay, extremely gravelly sandy clay, extremely gravelly clay loam.	GC	A-2	0-15	25-35	15-25	15-20	10-20	40-50	25-35
	36-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1340*:											
Laped	0-5	Very cobbly loam	SM-SC, GM-GC	A-4	30-50	65-80	50-70	45-60	35-50	20-30	5-10
	5-18	Gravelly clay loam.	GC, SC	A-6, A-7	0-5	60-80	55-70	45-60	35-50	35-45	15-20
	18-22	Indurated layer	---	---	---	---	---	---	---	---	---
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1340*:											
Colbar	0-1	Very cobbly loam	CL-ML	A-4	50-60	90-100	85-95	75-85	50-60	20-30	5-10
	1-24	Cobbly loam, gravelly clay loam, cobbly clay loam.	CL	A-6	10-35	90-95	70-85	60-80	50-65	30-40	10-20
	24-28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1350*:											
Burnborough	0-13	Very gravelly loam.	SC, SM-SC	A-2	5-10	65-75	40-55	30-45	25-35	20-35	5-15
	13-60	Very gravelly loam, very gravelly clay loam.	GC, SC	A-2	15-25	55-65	35-60	20-35	15-30	25-40	10-20
Cleavage	0-10	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	50-70	30-50	25-45	20-40	25-35	5-15
	10-17	Very cobbly clay loam, extremely gravelly clay loam, very gravelly loam.	GC	A-2	0-45	40-55	30-45	25-45	20-35	30-45	10-20
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Reluctan	0-9	Gravelly loam	SM-SC, CL-ML	A-4	5-10	70-80	60-75	50-65	40-55	25-30	5-10
	9-25	Gravelly clay loam, gravelly loam.	GC, CL	A-6, A-7	0-15	65-85	60-75	55-75	40-60	35-45	15-20
	25-29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1360*:											
Kram	0-2	Very gravelly very fine sandy loam.	GM	A-1, A-2	10-15	50-60	35-50	30-50	20-30	15-25	NP-5
	2-8	Very gravelly loam, very gravelly very fine sandy loam, extremely gravelly loam.	GM	A-1, A-2	0-15	25-60	15-55	15-45	10-30	15-25	NP-5
	8-12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hopeka	0-10	Very gravelly loam.	GC	A-2	0-15	40-55	25-50	25-45	20-35	25-35	10-15
	10-14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1390*:											
Mulhop	0-6	Cobbly loam	SM-SC, CL-ML	A-4	15-30	75-95	70-90	60-85	45-65	20-30	5-10
	6-17	Very gravelly loam, very gravelly silt loam.	GM-GC, GC	A-2, A-4, A-6	15-30	40-65	35-60	30-50	20-40	25-35	5-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Xine	0-10	Gravelly silt loam.	SM	A-2, A-4	0-5	65-80	50-75	45-60	30-45	15-25	NP-5
	10-38	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1410*:											
Yobe	0-14	Silt loam	CL, ML	A-6	0	100	100	95-100	80-95	35-40	10-15
	14-60	Stratified very fine sandy loam to silty clay loam.	CL, ML	A-6	0	100	100	95-100	75-95	35-40	10-15
Bezo	0-3	Silty clay	CH, CL, MH	A-7	0	100	100	95-100	90-100	45-55	20-25
	3-42	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	90-100	35-45	15-20
	42-60	Silty clay	CH, CL, MH	A-7	0	100	100	95-100	90-100	45-55	20-25
Yobe	0-14	Silt loam	CL, CL-ML	A-6, A-4	0	100	100	95-100	80-95	20-30	5-15
	14-60	Stratified very fine sandy loam to silty clay loam.	CL	A-6	0	100	100	95-100	75-95	25-30	10-15
1411*:											
Yobe	0-14	Silt loam	CL, ML	A-6	0	100	100	95-100	80-95	35-40	10-15
	14-60	Stratified very fine sandy loam to silty clay loam.	CL, ML	A-6	0	100	100	95-100	75-95	35-40	10-15
Sonoma	0-9	Silt loam	CL	A-6	0	100	100	95-100	75-90	30-35	10-15
	9-60	Stratified silt loam to silty clay loam.	CL, ML	A-6, A-7	0	100	100	95-100	85-95	35-50	10-25
1412	0-14	Silt loam	CL, CL-ML	A-6, A-4	0	100	100	95-100	80-95	20-30	5-15
Yobe	14-60	Stratified very fine sandy loam to silty clay loam.	CL	A-6	0	100	100	95-100	75-95	25-30	10-15
1420	0-4	Sandy loam	SM	A-4	0	100	90-100	65-80	40-50	---	NP
Goldrun Variant	4-60	Gypsiferous material.	---	---	---	---	---	---	---	---	---
1430	0-8	Silty clay	MH, CH	A-7	0	100	100	95-100	90-100	50-65	20-35
Yobe Variant	8-60	Silty clay	MH, CH	A-7	0	100	100	95-100	90-100	50-65	20-35

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
1450*:											
Alley	0-5	Very cobbly very fine sandy loam.	GM-GC, GM, SM-SC, SM	A-2	30-40	55-75	50-70	45-65	25-35	20-30	NP-10
	5-22	Gravelly clay loam, gravelly sandy clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-35	15-20
	22-30	Gravelly fine sandy loam, cobbly fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-4	0-40	60-85	50-80	35-75	25-40	25-30	NP-5
	30-60	Very cobbly fine sandy loam.	SM	A-2	30-45	70-75	60-70	45-55	25-35	25-30	NP-5
Snowmore	0-8	Very cobbly loam	GM-GC, GC, CL-ML, CL	A-4, A-6	40-50	70-85	65-80	55-75	45-60	25-35	5-15
	8-16	Loam, clay loam	CL	A-6	0-10	90-100	85-100	70-90	50-75	30-40	10-20
	16-24	Loam, clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	70-100	65-100	55-80	45-75	35-45	15-25
	24-28	Indurated layer--	---	---	---	---	---	---	---	---	---
	28-32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1480*:											
Tusel	0-12	Cobbly loam------	SM, ML, SM-SC, CL-ML	A-4	15-35	80-95	75-90	55-70	40-55	20-30	NP-10
	12-42	Extremely gravelly sandy clay loam, extremely gravelly clay loam, very gravelly clay loam.	GC	A-2	15-45	30-50	25-40	20-35	15-30	30-40	10-20
	42-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Layview	0-7	Very gravelly loam.	GM-GC	A-2	10-15	40-55	35-50	25-40	20-30	25-30	5-10
	7-14	Very gravelly loam, very gravelly clay loam.	GC	A-2, A-6	10-15	35-60	30-55	25-45	20-40	30-40	15-20
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1490*:											
Xine	0-10	Very gravelly loam.	GM	A-1, A-2	0-5	35-55	30-50	25-40	20-30	15-25	NP-5
	10-38	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1490*:											
Mulhop	0-6	Very gravelly loam.	GM-GC	A-2, A-4	0-15	40-55	35-50	30-45	25-40	20-30	5-10
	6-17	Very gravelly loam, very gravelly silt loam.	GM-GC, GC	A-2, A-4, A-6	0	35-55	30-50	25-45	20-40	25-35	5-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puffer	0-2	Very cobbly loam	GM-GC	A-2, A-4	25-40	45-70	40-65	35-55	20-45	20-25	5-10
	2-11	Very gravelly fine sandy loam, extremely gravelly sandy loam, very gravelly loam.	GP-GC, GM-GC	A-2	15-40	25-60	20-50	15-40	5-30	20-25	5-10
	11-12	Weathered bedrock	---	---	---	---	---	---	---	---	---
	12-16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
1500 Cortez	0-8	Very fine sandy loam.	ML	A-4	0	95-100	85-95	80-90	50-70	---	NP
	8-33	Clay, gravelly clay, silty clay.	CH	A-7	0	80-95	60-85	55-80	55-75	50-60	35-45
	33-46	Indurated layer--	---	---	---	---	---	---	---	---	---
	46-60	Very gravelly coarse sandy loam, very cobbly loamy coarse sand.	GP-GM, GM, SP-SM, SM	A-1	15-50	50-70	30-60	15-30	5-15	---	NP
1501*:											
Cortez	0-8	Very stony loam	ML, CL-ML	A-4	10-25	80-95	75-90	65-85	50-65	20-30	NP-10
	8-33	Gravelly clay, clay, silty clay.	CH	A-7	0	65-90	60-85	55-80	50-75	50-60	35-45
	33-46	Indurated layer--	---	---	---	---	---	---	---	---	---
	46-60	Very gravelly coarse sandy loam, very cobbly loamy coarse sand.	GP-GM, GM, SP-SM, SM	A-1	15-50	50-70	30-60	15-20	5-15	---	NP
Tenabo	0-5	Very cobbly loam	SM-SC, SM	A-4	30-50	75-90	60-75	50-70	35-50	15-25	NP-10
	5-17	Clay loam, sandy clay loam.	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	15-25
	17-24	Indurated layer--	---	---	---	---	---	---	---	---	---
	24-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GW-GM, GM, GP-GM	A-1	10-25	40-60	35-55	25-40	5-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1501*:											
Beoska	0-13	Very stony loam	ML	A-4	15-30	85-95	75-90	65-80	50-65	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	SM, GM	A-1, A-2	0-10	60-80	55-70	30-50	20-35	---	NP
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	---	NP
1510*:											
Locane	0-2	Cobbly loam	CL-ML, SM-SC	A-4	25-40	80-100	80-95	60-80	45-60	20-30	5-10
	2-16	Very gravelly clay loam.	GC	A-2	0-10	45-55	35-50	25-35	25-35	40-45	20-25
	16-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
1530*:											
Polum	0-7	Gravelly silt loam.	GM, ML	A-4	0-10	55-80	50-75	45-70	35-55	30-35	NP-5
	7-17	Very gravelly loam.	GM	A-1, A-2	0	35-55	25-45	20-45	15-35	30-35	NP-5
	17-60	Very gravelly loam, very gravelly silt loam.	GM	A-1, A-2	0	35-55	25-45	20-45	15-35	30-35	NP-5
Dekoom	0-3	Very gravelly loam.	GM	A-1, A-2	0-5	30-55	25-50	20-40	20-30	30-35	NP-5
	3-13	Gravelly silt loam, gravelly loam.	GM	A-2, A-4	0	60-70	50-60	45-60	30-50	30-35	NP-5
	13-37	Very gravelly loam, very gravelly silt loam.	GM	A-1, A-2	0	30-60	25-50	20-50	15-35	30-40	NP-10
	37-60	Extremely gravelly loam, very gravelly loam.	GM	A-1, A-2	0	25-45	15-35	10-35	10-25	30-40	NP-10
Polum Variant	0-2	Extremely gravelly loam.	GM, GP-GM	A-1	0-5	15-35	10-20	10-15	5-15	20-25	NP-5
	2-10	Very gravelly silt loam.	GM	A-1, A-2, A-4	0	30-55	25-50	20-45	15-40	20-25	NP-5
	10-23	Very gravelly silt loam, very gravelly loam.	GM	A-1, A-2, A-4	0-5	30-55	25-50	25-45	20-40	20-25	NP-5
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1540*:											
Dewar	0-5	Gravelly silt loam.	GC, CL, SC	A-6	0-5	60-90	55-80	45-80	35-70	25-35	10-15
	5-17	Gravelly silty clay loam, gravelly clay loam.	GC, CL	A-6, A-7	0-10	65-90	60-80	55-80	45-75	35-45	15-20
	17-40	Indurated layer--	---	---	---	---	---	---	---	---	---
Tenabo	0-5	Very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	60-80	20-30	NP-5
	5-17	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6	0	95-100	70-95	60-90	50-85	30-40	15-25
	17-24	Indurated layer--	---	---	---	---	---	---	---	---	---
	24-60	Stratified very gravelly sandy loam to extremely gravelly coarse sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Beoska	0-13	Very fine sandy loam.	ML, SM	A-4	0	85-95	75-95	70-80	45-65	15-25	NP-5
	13-25	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	80-100	75-100	70-85	60-85	35-45	15-25
	25-44	Stratified gravelly very fine sandy loam to gravelly sandy loam.	GM, SM	A-1, A-2	0-10	55-80	50-75	30-50	20-35	15-25	NP-5
	44-60	Stratified very gravelly sandy loam to extremely gravelly very fine sandy loam.	GM	A-1	0-15	30-55	25-50	15-35	10-25	15-25	NP-5
1550*:											
Eastwell	0-6	Very gravelly loam.	GM	A-1, A-2	0-5	35-55	30-50	25-40	20-35	20-25	NP-5
	6-12	Very gravelly loam, very gravelly sandy loam.	GM, GM-GC, GC	A-1, A-2	0-10	40-60	35-50	20-40	10-30	20-35	NP-15
	12-20	Cemented layer---	---	---	---	---	---	---	---	---	---
	20-60	Very gravelly loam, very cobbly loam.	GM, GM-GC	A-2, A-4	15-45	50-70	45-60	35-55	30-50	20-30	NP-10
Shabliss	0-3	Gravelly loam----	GM	A-4	0-5	60-75	55-70	40-60	35-50	20-25	NP-5
	3-19	Loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	50-65	15-20	NP-5
	19-30	Cemented layer---	---	---	---	---	---	---	---	---	---
	30-60	Very gravelly loamy sand.	GM	A-1	0-15	35-55	30-50	15-30	10-20	---	NP

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1550*:											
Blackhawk	0-3	Gravelly loam	SM, ML	A-4	0-5	75-85	70-75	60-70	45-55	30-35	NP-5
	3-14	Gravelly loam, gravelly very fine sandy loam.	SM, GM	A-4	0	65-75	55-70	50-65	35-50	30-35	NP-5
	14-30	Cemented layer	---	---	---	---	---	---	---	---	---
	30-48	Very gravelly fine sandy loam, very gravelly sandy loam.	GM	A-1	0	35-45	25-35	20-25	10-15	---	NP
	48-60	Extremely gravelly sand, extremely gravelly coarse sand.	GP, GW	A-1	0	25-35	15-25	10-15	0-5	---	NP
1551*:											
Eastwell	0-6	Very gravelly loam.	GM	A-1, A-2	0-5	35-55	30-50	25-40	20-35	20-25	NP-5
	6-12	Very gravelly loam, very gravelly sandy loam.	GM, GM-GC, GC	A-1, A-2	0-10	40-60	35-50	20-40	10-30	20-35	NP-15
	12-20	Cemented layer	---	---	---	---	---	---	---	---	---
	20-60	Very gravelly loam, very cobbly loam.	GM, GM-GC	A-2, A-4	15-45	50-70	45-60	35-55	30-50	20-30	NP-10
Shabliss	0-3	Gravelly loam	GM	A-4	0-5	60-75	55-70	40-60	35-50	20-25	NP-5
	3-19	Loam, very fine sandy loam.	ML	A-4	0	95-100	90-100	85-95	50-65	15-20	NP-5
	19-30	Cemented layer	---	---	---	---	---	---	---	---	---
	30-60	Very gravelly loamy sand.	GM	A-1	0-15	35-55	30-50	15-30	10-20	---	NP
Eastwell	0-6	Very gravelly loam.	GM	A-1, A-2	0-5	35-55	30-50	25-40	20-35	20-25	NP-5
	6-12	Very gravelly loam, very gravelly sandy loam.	GM, GM-GC, GC	A-1, A-2	0-10	40-60	35-50	20-40	10-30	20-35	NP-15
	12-20	Cemented layer	---	---	---	---	---	---	---	---	---
	20-60	Very gravelly loam, very cobbly loam.	GM, GM-GC	A-2, A-4	15-45	50-70	45-60	35-55	30-50	20-30	NP-10
1560*:											
Denay	0-10	Gravelly loam	GM, SM	A-4	0-5	65-80	50-70	45-65	35-50	---	NP
	10-44	Extremely gravelly loam, extremely gravelly silt loam.	GM	A-1	0-5	25-35	15-25	15-25	10-20	---	NP
	44-48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1560*:											
Wereld	0-3	Very gravelly silt loam.	GM	A-2, A-4	0-10	40-55	35-50	30-50	25-45	15-25	NP-5
	3-10	Gravelly silt loam.	GM, ML	A-4	0	60-80	55-75	50-70	40-65	15-25	NP-5
	10-25	Very gravelly loam, very gravelly silt loam.	GM	A-1, A-2, A-4	0-10	35-50	30-45	25-45	20-40	20-25	NP-5
	25-42	Very gravelly loam, very gravelly silt loam, extremely gravelly loam.	GM	A-1, A-2	0-15	20-40	15-35	15-35	10-30	20-25	NP-5
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Xine	0-10	Very gravelly loam.	GM	A-1, A-2	0-5	35-55	30-50	25-40	20-30	15-25	NP-5
	10-38	Very cobbly loam, very cobbly sandy loam.	GM, SM	A-2, A-4, A-1	35-50	55-80	50-75	35-60	20-45	15-25	NP-5
	38-42	Weathered bedrock	---	---	---	---	---	---	---	---	---
1570	0-2	Loam	ML	A-4	0	95-100	90-100	80-95	55-75	20-25	NP-5
Pocker Variant	2-60	Stratified silt loam to very fine sandy loam.	ML	A-4	0	100	100	90-100	75-90	20-25	NP-5
1640*:											
Isolde	0-1	Fine sand	SP, SP-SM	A-3	0	100	100	75-90	0-10	---	NP
	1-60	Fine sand, sand	SP, SP-SM	A-3	0	100	100	50-80	0-10	---	NP
Parran	0-7	Silty clay	CH, CL	A-7	0	100	100	95-100	85-100	45-60	20-30
	7-26	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-100	45-60	20-30
	26-60	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-100	45-60	20-30
Appian	0-4	Sandy loam	SM	A-2, A-4	0	95-100	90-100	50-65	25-40	15-25	NP-5
	4-9	Clay loam, sandy clay loam.	SC, CL	A-6, A-7	0	95-100	90-100	75-90	40-60	35-45	15-20
	9-25	Stratified sand to sandy loam.	SM	A-2	0	75-100	75-90	50-65	10-25	---	NP
	25-56	Sand, coarse sand	SP, SP-SM	A-1	0	85-100	75-90	30-50	0-10	---	NP
	56-60	Silt loam	CL-ML, ML	A-4	0	100	100	95-100	85-95	20-35	5-10
1650*:											
Bango	0-5	Very gravelly loamy sand.	GP-GM, GM	A-1	0-5	40-55	35-50	20-35	5-15	---	NP
	5-9	Loam, clay loam	CL	A-6	0-5	90-100	90-100	75-90	55-75	30-35	10-15
	9-60	Stratified gravelly fine sandy loam to silty clay loam.	CL	A-6	0-5	85-95	85-95	70-90	55-75	25-35	10-15

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
1650*:											
Appian----------	0-4	Loam----------	CL-ML	A-4	0	95-100	90-100	75-95	55-70	20-30	5-10
	4-9	Clay loam, sandy clay loam.	SC, CL	A-6, A-7	0	95-100	90-100	75-90	40-60	35-45	15-20
	9-25	Stratified sand to sandy loam.	SM	A-2	0	75-100	75-90	50-65	10-25	---	NP
	25-60	Sand, coarse sand	SP, SP-SM	A-1	0	85-100	75-90	30-50	0-10	---	NP
1660*:											
Biddleman-------	0-3	Gravelly sandy loam.	SM	A-1, A-2	5-10	70-80	60-70	40-55	20-35	20-25	NP-5
	3-13	Gravelly loam----	SC, GC	A-2, A-6	0-5	60-75	55-65	40-55	30-45	30-35	10-15
	13-60	Stratified extremely gravelly loamy fine sand to coarse sand.	GP	A-1	5-15	10-30	10-20	5-10	0-5	---	NP
Trocken---------	0-3	Gravelly very fine sandy loam.	GM, SM	A-2, A-4	0-15	65-85	60-75	50-70	30-50	20-25	NP-5
	3-60	Stratified extremely gravelly loamy coarse sand to very cobbly loam.	GM-GC, GP-GC	A-2	5-40	20-60	15-40	10-35	5-25	20-30	5-10
Biddleman-------	0-3	Very stony sandy loam.	SM	A-1, A-2	15-30	70-80	60-70	40-55	20-35	---	NP
	3-13	Gravelly clay loam, gravelly loam, gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-75	55-65	40-55	30-45	30-35	10-15
	13-60	Stratified extremely gravelly loamy fine sand to coarse sand.	GP, GP-GM	A-1	5-15	10-30	10-20	5-10	0-10	---	NP
3000*:											
Jobpeak---------	0-5	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	15-30	45-65	35-60	25-45	20-40	15-25	NP-10
	5-9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Teguro----------	0-2	Very stony loam	SM	A-4	10-25	70-80	60-75	45-60	35-50	15-25	NP-5
	2-19	Gravelly clay loam, gravelly loam.	SC	A-2, A-6	0-10	65-80	50-75	35-60	30-50	30-40	15-20
	19-23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3010*:											
Bedwyr----------	0-3	Stony loam-------	SC, CL	A-6	10-25	80-95	60-75	50-65	40-55	25-35	10-15
	3-15	Clay, silty clay	CH	A-7	0	95-100	90-100	90-100	70-80	50-60	25-30
	15-19	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3010*:											
Bedzee----------	0-4	Very stony loam	CL	A-6	10-15	90-100	90-100	65-80	50-60	30-35	10-15
	4-10	Gravelly clay----	CH	A-7	0-5	80-90	65-75	55-70	50-65	50-65	25-40
	10-14	Weathered bedrock	---	---	---	---	---	---	---	---	---
Jobpeak---------	0-5	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	15-30	45-65	35-60	25-45	20-40	15-25	NP-10
	5-9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3020*:											
Uripnes---------	0-6	Very stony sandy loam.	SM	A-1	20-35	75-90	30-50	25-35	10-25	20-25	NP-5
	6-22	Weathered bedrock	---	---	---	---	---	---	---	---	---
	22-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3030*:											
Singatse--------	0-4	Very gravelly loam.	SM	A-2	0-10	70-80	45-55	35-45	25-35	15-25	NP-5
	4-8	Very gravelly sandy loam, very gravelly loam.	SM	A-1, A-2	0-10	60-70	30-50	20-30	10-30	15-25	NP-5
	8-15	Weathered bedrock	---	---	---	---	---	---	---	---	---
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Singatse--------	0-4	Very gravelly loam.	SM	A-2	0-10	70-80	45-55	35-45	25-35	15-25	NP-5
	4-8	Very gravelly sandy loam, very gravelly loam.	SM	A-1, A-2	0-10	60-70	30-50	20-30	10-30	15-25	NP-5
	8-15	Weathered bedrock	---	---	---	---	---	---	---	---	---
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3031*:											
Singatse--------	0-4	Very stony loam	GM	A-1, A-2	40-50	30-40	25-35	20-30	15-30	20-25	NP-5
	4-8	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0-10	35-55	30-50	20-45	10-35	15-25	NP-5
	8-15	Weathered bedrock	---	---	---	---	---	---	---	---	---
	15-19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Jobpeak---------	0-5	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	15-30	45-65	35-60	25-45	20-40	15-25	NP-10
	5-9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 5.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	> 3 inches	4	10	40	200		
	In				Pct					Pct	
3040*:											
Madeline	0-6	Very stony loam	GC, SC, CL	A-6	10-25	70-85	65-80	55-75	45-55	30-35	10-15
	6-13	Sandy clay loam, clay loam, sandy clay.	SC, CL	A-2, A-6, A-7	0-10	85-95	80-90	65-80	30-60	35-45	15-20
	13-17	Sandy clay, gravelly clay, stony sandy clay.	SC, CL, CH, GC	A-2, A-7	5-15	60-95	55-90	45-75	30-55	45-65	25-40
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Millerlux	0-6	Very stony loam	SM-SC, SC	A-4, A-6	15-25	75-90	65-80	45-65	35-50	25-35	5-15
	6-13	Clay	CH	A-7	0-10	90-100	85-100	80-95	60-75	50-65	25-40
	13-18	Clay, clay loam, gravelly clay.	CL, CH, SC, GC	A-7	0-15	70-90	65-85	60-80	45-60	40-55	15-30
	18-22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
3050*:											
Millerlux	0-6	Very stony loam	SM-SC, SC	A-4, A-6	15-25	75-90	65-80	45-65	35-50	25-35	5-15
	6-13	Clay	CH	A-7	0-10	90-100	85-100	80-95	60-75	50-65	25-40
	13-17	Clay, clay loam, gravelly clay.	CL, CH, SC, GC	A-7	0-15	70-90	65-85	60-80	45-60	40-55	15-30
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ninemile	0-7	Very stony loam	CL-ML	A-4	40-70	70-90	70-85	60-75	50-60	25-30	5-10
	7-14	Clay, gravelly clay.	CH	A-7	0-15	70-100	65-100	60-90	50-80	55-65	30-35
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Madeline	0-6	Very stony loam	GC, SC, CL	A-6	10-25	70-85	65-80	55-75	45-55	30-35	10-15
	6-13	Sandy clay loam, clay loam, sandy clay.	SC, CL	A-2, A-6, A-7	0-10	85-95	80-90	65-80	30-60	35-45	15-20
	13-17	Sandy clay, gravelly clay, stony sandy clay.	SC, CL, CH, GC	A-2, A-7	5-15	60-95	55-90	45-75	30-55	45-65	25-40
	17-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Adelaide	Loamy, mixed, mesic, shallow Entic Durorthids
Alley	Fine-loamy, mixed, mesic Durixerollic Haplargids
Alyan	Fine, montmorillonitic, frigid Aridic Argixerolls
Appian	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Natrargids
Argenta	Coarse-loamy, mixed (calcareous), mesic Aeric Halaquepts
Atlow	Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids
Bango	Fine-loamy, mixed, mesic Haplic Natrargids
Batan	Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents
Bedwyr	Clayey, montmorillonitic, mesic, shallow Typic Natrargids
Bedzee	Clayey, montmorillonitic, mesic, shallow Xerollic Haplargids
Benin	Fine, montmorillonitic (calcareous), mesic Typic Torriorthents
Beoska	Fine-loamy, mixed, mesic Duric Natrargids
Bezo	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
Biddleman	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Natrargids
Blackhawk	Loamy, mixed, mesic, shallow Entic Durorthids
Bliss	Coarse-loamy, mixed, mesic Haploxerollic Durorthids
Bluewing	Sandy-skeletal, mixed, mesic Typic Torriorthents
Bojo	Loamy, mixed, mesic Lithic Haplargids
Bojo Variant	Clayey, montmorillonitic, mesic, shallow Typic Haplargids
Boton	Fine-silty, mixed (calcareous), mesic Durorthidic Torriorthents
Bubus	Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents
Burnborough	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Burrita	Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids
Chen	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Chiara	Loamy, mixed, mesic, shallow Xerollic Durorthids
Chilper	Fine, montmorillonitic, mesic Duric Natrargids
Chumall	Fine-silty, mixed (calcareous), mesic Typic Torriorthents
Cleavage	Loamy-skeletal, mixed, frigid Lithic Argixerolls
*Cleaver	Loamy, mixed, mesic, shallow Typic Durargids
Colbar	Fine-loamy, mixed, mesic Xerollic Haplargids
Cortez	Fine, montmorillonitic, mesic Xerollic Nadurargids
Daick	Clayey, montmorillonitic (calcareous), mesic, shallow Typic Torriorthents
Dekoom	Loamy-skeletal, carbonatic Cryic Rendolls
Denay	Loamy-skeletal, mixed, frigid Aridic Calcixerolls
Dewar	Loamy, mixed, mesic, shallow Xerollic Durargids
Duffer	Fine-silty, carbonatic, mesic Aquic Calciorthids
Dun Glen	Coarse-loamy, mixed, mesic Typic Camborthids
Eastwell	Loamy-skeletal, mixed, mesic, shallow Haploxerollic Durorthids
Enko	Coarse-loamy, mixed, mesic Durixerollic Camborthids
Findout	Loamy-skeletal, carbonatic, mesic Lithic Calciorthids
Frewa	Mixed, mesic Durorthidic Xeric Torripsamments
Genegraf	Fine-loamy, mixed, mesic Duric Natrargids
Gol	Loamy-skeletal, mixed, frigid, shallow Xerollic Haplargids
Golconda	Fine-loamy, mixed, mesic Haplic Nadurargids
Goldrun	Mixed, mesic Xeric Torripsamments
Goldrun Variant	Coarse-loamy, gypsic (calcareous), mesic Typic Torriorthents
Golsum	Clayey-skeletal, montmorillonitic, frigid Aridic Calcic Argixerolls
Gosumi	Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls
Gwena	Loamy, mixed, mesic, shallow Xerollic Nadurargids
Harcany	Loamy-skeletal, mixed Pachic Cryoborolls
Hawsley	Mixed, mesic Typic Torripsamments
Hoot	Loamy-skeletal, mixed, mesic Lithic Haplargids
Hopeka	Loamy-skeletal, carbonatic, frigid Lithic Xeric Torriorthents
Humboldt	Fine, montmorillonitic (calcareous), mesic Fluvaquentic Haplaquolls
Isolde	Mixed, mesic Typic Torripsamments
Iver	Coarse-loamy, mixed, frigid Pachic Haploxerolls
Jerval	Fine-loamy, mixed, mesic Duric Natrargids
Jobpeak	Loamy-skeletal, mixed, nonacid, mesic Lithic Xeric Torriorthents
Knoss	Clayey, montmorillonitic, mesic, shallow Typic Nadurargids
Knott	Clayey, montmorillonitic, mesic, shallow Typic Nadurargids
Kram	Loamy-skeletal, carbonatic, mesic Lithic Xeric Torriorthents

TABLE 6.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Laped	Loamy, mixed, mesic, shallow Typic Durargids
Layview	Loamy-skeletal, mixed Argic Lithic Cryoborolls
Linrose	Loamy-skeletal, mixed, frigid Aridic Haploxerolls
Locane	Clayey-skeletal, montmorillonitic, frigid Lithic Xerollic Haplargids
*Madeline	Clayey, montmorillonitic, frigid Lithic Argixerolls
Mazuma	Coarse-loamy, mixed (calcareous), mesic Typic Torriorthents
McConnel	Sandy-skeletal, mixed, mesic Xerollic Camborthids
Millerlux	Clayey, montmorillonitic, frigid Lithic Xerollic Haplargids
Misad	Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents
Misad Variant	Loamy-skeletal, mixed (calcareous), mesic Durorthidic Torriorthents
Mulhop	Loamy-skeletal, mixed, frigid Lithic Xerollic Calciorthids
Needle Peak	Fine-silty, mixed (calcareous), mesic Aquic Torriorthents
Ninch	Sandy, mixed, mesic Durorthidic Xeric Torrifluvents
Ninemile	Clayey, montmorillonitic, frigid Lithic Argixerolls
Nomara	Loamy-skeletal, mixed, frigid Calcic Pachic Argixerolls
Orovada	Coarse-loamy, mixed, mesic Durixerollic Camborthids
Oxcorel	Fine, montmorillonitic, mesic Duric Natrargids
Oxcorel Variant	Fine, montmorillonitic, mesic Duric Natrargids
Parran	Fine, montmorillonitic, mesic Typic Salorthids
*Pirouette	Loamy-skeletal, mixed, mesic, shallow Typic Nadurargids
Pocan	Fine-loamy, mixed, mesic Xerollic Camborthids
Pocker	Fine, montmorillonitic (calcareous), mesic Typic Torrifluvents
Pocker Variant	Coarse-silty, mixed (calcareous), mesic Aquic Xerofluvents
Polum	Loamy-skeletal, mixed Calcic Pachic Cryoborolls
Polum Variant	Loamy-skeletal, mixed Calcic Cryoborolls
Preble	Coarse-loamy, mixed (calcareous), mesic Aquic Durorthidic Torriorthents
Preble Variant	Fine-loamy, mixed (calcareous), mesic Aquic Durorthidic Torriorthents
Puffer	Loamy-skeletal, mixed (calcareous), mesic Lithic Xeric Torriorthents
Pumper	Sandy-skeletal, mixed, mesic Typic Camborthids
Raglan	Fine-loamy, mixed, mesic Duric Camborthids
Ragtown	Fine, montmorillonitic (calcareous), mesic Typic Torriorthents
Rebel	Coarse-loamy, mixed, mesic Xerollic Camborthids
Reluctan	Fine-loamy, mixed, frigid Aridic Argixerolls
Reluctan Variant	Fine-loamy, mixed, frigid Xerollic Haplargids
Rezave	Clayey, montmorillonitic, mesic Lithic Natrargids
Roca	Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids
Say	Fine-loamy, mixed, frigid Aridic Argixerolls
Schamp	Fine, montmorillonitic, mesic Xerollic Haplargids
Shabliss	Loamy, mixed, mesic, shallow Haploxerollic Durorthids
Singatse	Loamy-skeletal, mixed (calcareous), mesic Lithic Torriorthents
Slaven	Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls
Slaw	Fine-silty, mixed (calcareous), mesic Typic Torrifluvents
Snapp	Clayey over sandy or sandy-skeletal, montmorillonitic, mesic Durixerollic Natrargids
Snowmore	Fine-loamy, mixed, mesic Xerollic Durargids
Sodhouse	Loamy, mixed, mesic, shallow Typic Durorthids
Sondoa	Fine-silty, mixed (calcareous), mesic Typic Torriorthents
Sonoma	Fine-silty, mixed (calcareous), mesic Aeric Fluvaquents
Spinlin	Clayey-skeletal, montmorillonitic Argic Cryoborolls
Sumine	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Sumya	Clayey-skeletal, montmorillonitic, nonacid, frigid Lithic Xeric Torriorthents
Swingler	Fine-silty, mixed (calcareous), mesic Typic Torriorthents
Teguro	Loamy, mixed, frigid Lithic Argixerolls
Tenabo	Loamy, mixed, mesic, shallow Typic Nadurargids
Theon	Loamy-skeletal, mixed, mesic Lithic Haplargids
Toulon	Sandy-skeletal, mixed, mesic Typic Camborthids
Trocken	Loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents
Trocken Variant	Loamy-skeletal, mixed (calcareous), mesic Xeric Torriorthents
Trunk	Fine, montmorillonitic, mesic Xerollic Haplargids
Tusel	Loamy-skeletal, mixed Argic Pachic Cryoborolls
Uripnes	Loamy-skeletal, mixed, nonacid, mesic, shallow Typic Torriorthents
Valmy	Coarse-loamy, mixed (calcareous), mesic Durorthidic Torriorthents
Wendane	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
Wereld	Loamy-skeletal, mixed, frigid Aridic Calcixerolls
Weso	Coarse-loamy, mixed, mesic Duric Camborthids

TABLE 6.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Whirlo	Loamy-skeletal, mixed, mesic Typic Camborthids
Wholan	Coarse-silty, mixed, mesic Typic Camborthids
Wiskan	Loamy-skeletal, mixed, frigid Xerollic Haplargids
Woolsey	Coarse-loamy, mixed, mesic Typic Haplargids
Xine	Loamy-skeletal, mixed, frigid Aridic Calcixerolls
Yipor	Coarse-silty, mixed (calcareous), mesic Typic Torriorthents
Yobe	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
Yobe Variant	Fine, montmorillonitic (calcareous), mesic Aeric Halaquepts

Rangeland Plants and Woodland Understory

110--Adelaide silt loam, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Adelaide	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	---
Indian ricegrass	ORHY	5-15	5-15	---	5-15
Bottlebrush squirreltail	SIHY	2-10	5-15	---	5-15
Sandberg bluegrass	POSE	2-10	2-5	2-5	2-5
Needleandthread	STCO4	---	1-3	1-3	1-3
Tapertip hawksbeard	CRAC2	1-2	---	---	---
Globemallow	SPHAE	1-2	---	---	---
Phlox	PHLOX	1-2	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8
Wyoming big sagebrush	ARTRW	30-35	---	---	---
Spiny hopsage	GRSP	5-15	2-5	2-5	2-5
Shadscale	ATCO	---	30-40	---	30-40
Bud sagebrush	ARSP5	---	20-30	---	20-30
Winterfat	EULA5	---	2-5	2-5	2-5
Range site number		024X020N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

112--Adelaide silt loam, 4 to 15 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Adelaide	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-10	2-5	2-5	2-5
Needleandthread	STCO4	---	1-3	1-3	1-3
Tapertip hawksbeard	CRAC2	1-2	---	---	---
Globemallow	SPHAE	1-2	---	---	---
Phlox	PHLOX	1-2	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8
Wyoming big sagebrush	ARTRW	30-35	---	---	---
Spiny hopsage	GRSP	5-15	2-5	2-5	2-5
Shadscale	ATCO	---	30-40	30-40	30-40
Bud sagebrush	ARSP5	---	20-30	20-30	20-30
Winterfat	EULA5	---	2-5	2-5	2-5
Range site number		024X020N	024X002N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

113--Adelaide silt loam, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Adelaide	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-10	2-5	2-5	2-5
Needleandthread	STCO4	---	1-3	1-3	1-3
Tapertip hawksbeard	CRAC2	1-2	---	---	---
Globemallow	SPHAE	1-2	---	---	---
Phlox	PHLOX	1-2	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8
Wyoming big sagebrush	ARTRW	30-35	---	---	---
Spiny hopsage	GRSP	5-15	2-5	2-5	2-5
Shadscale	ATCO	---	30-40	30-40	30-40
Bud sagebrush	ARSP5	---	20-30	20-30	20-30
Winterfat	EULA5	---	2-5	2-5	2-5
Range site number		O24XO20N	O24XO02N	O24XO02N	O24XO02N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

120--Hawsley sand, moderately wet, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Hawsley	1	2	3
Indian ricegrass	ORHY	40-50	40-50	2-5	---
Needleandthread	STCO4	10-20	10-20	---	---
Basin wildrye	ELCI2	2-5	2-5	5-20	---
Sand dropseed	SPCR	1-2	1-2	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---
Inland saltgrass	DISPS2	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	5-15
Thelypody	THELY	---	---	2-4	---
Other perennial forbs	PPFF	5-10	5-10	---	3-7
Black greasewood	SAVE4	10-15	10-15	20-30	40-60
Winterfat	EULA5	5-10	5-10	---	---
Nevada dalea	PSPO	2-5	2-5	---	---
Basin big sagebrush	ARTRT	---	---	5-15	---
Wyoming big sagebrush	ARTRW	---	---	5-10	---
Spiny hopsage	GRSP	---	---	5-15	---
Shadscale	ATCO	---	---	---	2-10
Seepweed	SUAED	---	---	---	2-5
Other shrubs	SSSS	---	---	---	5-15
Range site number		027X012N	027X012N	024X022N	027X025N
Potential production (lb/acre):					
Favorable years		500	500	800	400
Normal years		400	400	600	200
Unfavorable years		300	300	350	50

121--Hawsley fine sand, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Hawsley	1	2
Indian ricegrass	ORHY	30-50	10-20	---
Needleandthread	STCO4	2-10	5-10	---
Inland saltgrass	DISPS2	---	---	5-10
Other perennial grasses	PPGG	2-10	2-5	5-15
Perennial forbs	PPFF	2-5	2-5	3-7
Fourwing saltbush	ATCA2	5-15	---	---
Winterfat	EULA5	2-10	---	---
Nevada dalea	PSPO	2-10	---	---
Black greasewood	SAVE4	---	10-40	40-60
Shadscale	ATCO	---	---	2-10
Seepweed	SUAED	---	---	2-5
Other shrubs	SSSS	5-10	5-20	5-15
Range site number		027X009N	027X016N	027X025N
Potential production (lb/acre):				
Favorable years		800	300	400
Normal years		450	200	200
Unfavorable years		200	50	50

122--Hawsley-Ragtown association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Hawsley	Ragtown	1	2	3	4
Indian ricegrass	ORHY	30-50	---	2-5	---	10-20	5-10
Needleandthread	STCO4	2-10	---	---	---	5-10	---
Inland saltgrass	DISPS2	---	5-10	---	5-10	---	2-5
Basin wildrye	ELCI2	---	---	5-20	5-15	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	5-10
Other perennial grasses	PPGG	2-10	5-15	---	---	2-5	---
Thelypody	THELY	---	---	2-4	---	---	---
Other perennial forbs	PPFF	2-5	3-7	---	T-5	2-5	3-7
Fourwing saltbush	ATCA2	5-15	---	---	---	---	---
Winterfat	EULA5	2-10	---	---	---	---	---
Nevada dalea	PSPO	2-10	---	---	---	---	---
Black greasewood	SAVE4	---	40-60	20-30	60-75	10-40	5-20
Shadscale	ATCO	---	2-10	---	---	---	20-40
Seepweed	SUAED	---	2-5	---	---	---	5-15
Basin big sagebrush	ARTRT	---	---	5-15	---	---	---
Wyoming big sagebrush	ARTRW	---	---	5-10	---	---	---
Spiny hopsage	GRSP	---	---	5-15	---	---	---
Bailey greasewood	SAVEB	---	---	---	---	---	2-10
Bud sagebrush	ARSP5	---	---	---	---	---	2-10
Other shrubs	SSSS	5-10	5-15	---	---	5-20	---
Range site number		027X009N	027X025N	024X022N	024X011N	027X016N	027X024N
Potential production (lb/acre):							
Favorable years		800	400	800	500	300	600
Normal years		450	200	600	350	200	400
Unfavorable years		200	50	350	200	50	200

131--Jerval-Chilper-Bluewing association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jerval	Chilper	Bluewing	1	2	3
Bluegrass	POA++	10-30	10-30	10-30	10-30	---	---
Bottlebrush squirreltail	SIHY	---	---	2-10	---	5-10	2-10
Indian ricegrass	ORHY	---	---	---	---	5-10	5-10
Inland saltgrass	DISPS2	---	---	---	---	2-5	---
Other perennial grasses	PPGG	5-15	5-15	---	5-15	---	---
Perennial forbs	PPFF	2-5	2-5	5-10	2-5	3-7	2-5
Shadscale	ATCO	20-30	20-30	10-20	20-30	20-40	---
Bud sagebrush	ARSP5	10-20	10-20	5-10	10-20	2-10	---
Bailey greasewood	SAVEB	---	---	5-10	---	2-10	5-20
Black greasewood	SAVE4	---	---	---	---	5-20	---
Seepweed	SUAED	---	---	---	---	5-15	---
Littleleaf horsebrush	TEGL	---	---	---	---	---	5-25
Rubber rabbitbrush	CHNA2	---	---	---	---	---	5-20
Spiny hopsage	GRSP	---	---	---	---	---	5-20
Burrobrush	HYMEN3	---	---	---	---	---	5-10
Fourwing saltbush	ATCA2	---	---	---	---	---	5-10
Other shrubs	SSSS	5-10	5-10	5-15	5-10	---	---
Range site number		027X028N	027X028N	027X030N	027X028N	027X024N	027X022N
Potential production (lb/acre):							
Favorable years		700	700	400	700	600	400
Normal years		500	500	300	500	400	200
Unfavorable years		300	300	200	300	200	50

132--Jerval-Knoss-Chilper association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Jerval	Knoss	Chilper	1	2	3	4
Bluegrass	POA++	10-30	10-30	10-30	10-30	---	---	10-40
Bottlebrush squirreltail	SIHY	---	---	---	2-10	---	5-10	2-10
Indian ricegrass	ORHY	---	---	---	---	5-10	5-10	---
Inland saltgrass	DISPS2	---	---	---	---	2-5	---	---
Thurber needlegrass	STTH2	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	5-15	5-15	---	5-15	---	---	5-10
Perennial forbs	PPFF	2-5	2-5	5-10	2-5	3-7	2-5	5-10
Shadscale	ATCO	20-30	20-30	10-20	20-30	20-40	---	5-10
Bud sagebrush	ARSP5	10-20	10-20	5-10	10-20	2-10	---	---
Bailey greasewood	SAVEB	---	---	5-10	---	2-10	5-20	---
Black greasewood	SAVE4	---	---	---	---	5-20	---	---
Seepweed	SUAED	---	---	---	---	5-15	---	---
Littleleaf horsebrush	TEGL	---	---	---	---	---	5-25	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	5-20	---
Spiny hopsage	GRSP	---	---	---	---	---	5-20	---
Burrobrush	HYMEN3	---	---	---	---	---	5-10	---
Fourwing saltbush	ATCA2	---	---	---	---	---	5-10	---
Black sagebrush	ARARN	---	---	---	---	---	---	20-30
Other shrubs	SSSS	5-10	5-10	5-15	5-10	---	---	5-10
Range site number		O27XO28N	O27XO28N	O27XO30N	O27XO28N	O27XO24N	O27XO22N	O27XO32N
Potential production (lb/acre):								
Favorable years		700	700	400	700	600	400	600
Normal years		500	500	300	500	400	200	400
Unfavorable years		300	300	200	300	200	50	200

133--Jerval-Trocken-Golconda association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Jerval	Trocken	Golconda	1	2
Bluegrass	POA++	10-30	10-30	10-30	---	---
Pine bluegrass	POSC	---	---	---	5-15	5-15
Indian ricegrass	ORHY	---	---	---	5-15	5-15
Bottlebrush squirreltail	SIHY	---	---	---	5-10	5-10
Other perennial grasses	PPGG	5-15	5-15	5-15	5-10	5-10
Perennial forbs	PPFF	2-5	2-5	2-5	5-10	5-10
Shadscale	ATCO	20-30	20-30	20-30	---	---
Bud sagebrush	ARSP5	10-20	10-20	10-20	---	---
Wyoming big sagebrush	ARTRW	---	---	---	10-20	10-20
Spiny hopsage	GRSP	---	---	---	10-20	10-20
Nevada ephedra	EPNE	---	---	---	5-10	5-10
Other shrubs	SSSS	5-10	5-10	5-10	---	---
Range site number		027X028N	027X028N	027X028N	027X008N	027X008N
Potential production (lb/acre):						
Favorable years		500	500	500	500	500
Normal years		300	300	300	300	300
Unfavorable years		700	700	700	700	700

144--Beoska-Tenabo-Dun Glen association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Beoska	Tenabo	Dun Glen	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	2-5	---
Wyoming big sagebrush	ARTRW	---	---	---	---	30-35
Range site number		024X002N	024X002N	024X002N	024X002N	024X020N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

146--Beoska-Oxcorel-Whirlo association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Beoska	Oxcorel	Whirlo	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15	5-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5	---
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3	---
Thurber needlegrass	STTH2	---	---	---	10-20	---	---
Other perennial grasses	PPGG	---	---	---	---	---	T-10
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40	30-50
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30	5-15
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5	---
Winterfat	EULA5	2-5	2-5	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW	---	---	---	30-35	---	---
Black greasewood	SAVE4	---	---	---	---	---	15-30
Seepweed	SUAED	---	---	---	---	---	2-15
Range site number		O24XO02N	O24XO02N	O24XO02N	O24XO20N	O24XO02N	O24XO03N
Potential production (lb/acre):							
Favorable years		700	700	700	700	700	600
Normal years		450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300

151--Blackhawk silt loam, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Blackhawk	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-10	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-10	2-5	2-5
Needleandthread	STCO4	1-3	---	1-3	1-3
Thurber needlegrass	STTH2	---	10-20	---	---
Tapertip hawksbeard	CRAC2	---	1-2	---	---
Globemallow	SPHAE	---	1-2	---	---
Phlox	PHLOX	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	2-8	2-8
Shadscale	ATCO	30-40	---	30-40	30-40
Bud sagebrush	ARSP5	20-30	---	20-30	20-30
Spiny hopsage	GRSP	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	2-5
Wyoming big sagebrush	ARTRW	---	30-35	---	---
Range site number		024X002N	024X020N	024X002N	024X002N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

161--Bliss-Chiara association, sloping

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Bliss	Chiara	1	2
Thurber needlegrass	STTH2	10-20	20-50	---	20-50
Indian ricegrass	ORHY	5-15	---	2-5	---
Bottlebrush squirreltail	SIHY	2-10	---	2-5	---
Sandberg bluegrass	POSE	2-10	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	5-10
Basin wildrye	ELCI2	---	---	5-20	---
Tapertip hawksbeard	CRAC2	1-2	2-4	---	2-4
Globemallow	SPHAE	1-2	---	---	---
Phlox	PHLOX	1-2	---	---	---
Balsamroot	BALSA	---	2-4	---	2-4
Thelypody	THELY	---	---	2-4	---
Wyoming big sagebrush	ARTRW	30-35	15-20	5-10	15-20
Spiny hopsage	GRSP	5-15	2-5	5-15	2-5
Downy rabbitbrush	CHVIP	---	2-5	---	2-5
Black greasewood	SAVE4	---	---	20-30	---
Basin big sagebrush	ARTRT	---	---	5-15	---
Other shrubs	SSSS	---	2-10	---	2-10
Range site number		024X020N	024X005N	024X022N	024X005N
Potential production (lb/acre):					
Favorable years		700	800	800	800
Normal years		450	600	600	600
Unfavorable years		300	400	350	400

162--Bliss-Chiara association, moderately steep

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Bliss	Chiara	1	2	3
Thurber needlegrass	STTH2	10-20	20-50	---	10-20	---
Indian ricegrass	ORHY	5-15	---	20-40	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	---	---	2-10	5-15
Sandberg bluegrass	POSE	2-10	---	---	2-10	2-5
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Needleandthread	STCO4	---	---	5-15	---	1-3
Basin wildrye	ELCI2	---	---	2-10	---	---
Thickspike wheatgrass	AGDA	---	---	2-10	---	---
Tapertip hawksbeard	CRAC2	1-2	2-4	---	1-2	---
Globemallow	SPHAE	1-2	---	---	1-2	---
Phlox	PHLOX	1-2	---	---	1-2	---
Balsamroot	BALSA	---	2-4	---	---	---
Lemon scurfpea	PSLA	---	---	2-5	---	---
Tufted eveningprimrose	OECE2	---	---	2-4	---	---
Other perennial forbs	PPFF	---	---	---	---	2-8
Wyoming big sagebrush	ARTRW	30-35	15-20	---	30-35	---
Spiny hopsage	GRSP	5-15	2-5	5-10	5-15	2-5
Downy rabbitbrush	CHVIP	---	2-5	---	---	---
Basin big sagebrush	ARTRT	---	---	10-20	---	---
Fourwing saltbush	ATCA2	---	---	2-10	---	---
Hairy horsebrush	TECO2	---	---	5-8	---	---
Black greasewood	SAVE4	---	---	2-8	---	---
Rubber rabbitbrush	CHNA2	---	---	1-5	---	---
Shadscale	ATCO	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	20-30
Winterfat	EULA5	---	---	---	---	2-5
Other shrubs	SSSS	---	2-10	---	---	---
Range site number		O24XO20N	O24XO05N	O24XO01N	O24XO20N	O24XO02N
Potential production (lb/acre):						
Favorable years		700	800	800	700	700
Normal years		450	600	500	450	450
Unfavorable years		300	400	300	300	300

170--Shabliss-Enko-Valmy association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Shabliss	Enko	Valmy	1	2	3
Thurber needlegrass	STTH2	10-20	10-20	---	---	10-20	20-50
Indian ricegrass	ORHY	5-15	5-15	2-5	20-40	5-15	---
Bottlebrush squirreltail	SIHY	2-10	2-10	2-5	---	2-10	---
Sandberg bluegrass	POSE	2-10	2-10	---	---	2-10	---
Basin wildrye	ELCI2	---	---	5-20	2-10	---	---
Needleandthread	STCO4	---	---	---	5-15	---	---
Thickspike wheatgrass	AGDA	---	---	---	2-10	---	---
Bluebunch wheatgrass	AGSP	---	---	---	---	---	5-10
Tapertip hawksbeard	CRAC2	1-2	1-2	---	---	1-2	2-4
Globemallow	SPHAE	1-2	1-2	---	---	1-2	---
Phlox	PHLOX	1-2	1-2	---	---	1-2	---
Thelypody	THELY	---	---	2-4	---	---	---
Lemon scurfpea	PSLA	---	---	---	2-5	---	---
Tufted eveningprimrose	OECE2	---	---	---	2-4	---	---
Balsamroot	BALSA	---	---	---	---	---	2-4
Wyoming big sagebrush	ARTRW	30-35	30-35	5-10	---	30-35	15-20
Spiny hopsage	GRSP	5-15	5-15	5-15	5-10	5-15	2-5
Black greasewood	SAVE4	---	---	20-30	2-8	---	---
Basin big sagebrush	ARTRT	---	---	5-15	10-20	---	---
Fourwing saltbush	ATCA2	---	---	---	2-10	---	---
Hairy horsebrush	TECO2	---	---	---	5-8	---	---
Rubber rabbitbrush	CHNA2	---	---	---	1-5	---	---
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	2-10
Range site number		024X020N	024X020N	024X022N	024X001N	024X020N	024X005N
Potential production (lb/acre):							
Favorable years		700	700	800	800	700	800
Normal years		450	450	600	500	450	600
Unfavorable years		300	300	350	300	300	400

180--Chiara stony very fine sandy loam, 2 to 4 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Chiara	1	2	3
Thurber needlegrass	STTH2	20-50	10-20	---	20-50
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10
Indian ricegrass	ORHY	---	5-15	10-20	---
Bottlebrush squirreltail	SIHY	---	2-10	2-5	---
Sandberg bluegrass	POSE	---	2-10	---	---
Needleandthread	STCO4	---	---	20-30	---
Thickspike wheatgrass	AGDA	---	---	2-10	---
Balsamroot	BALSA	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	2-4	1-2	---	2-4
Globemallow	SPHAE	---	1-2	---	---
Phlox	PHLOX	---	1-2	---	---
Other perennial forbs	PPFF	---	---	10-20	---
Wyoming big sagebrush	ARTRW	15-20	30-35	T-5	15-20
Downy rabbitbrush	CHVIP	2-5	---	---	2-5
Spiny hopsage	GRSP	2-5	5-15	T-5	2-5
Basin big sagebrush	ARTRT	---	---	5-15	---
Other shrubs	SSSS	2-10	---	---	2-10
Range site number		024X005N	024X020N	024X017N	024X005N
Potential production (lb/acre):					
Favorable years		800	700	900	800
Normal years		600	450	700	600
Unfavorable years		400	300	500	400

190--Theon-Singatse-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Theon	Singatse	Rock outcrop	1	2	3	4
Galleta	HIJA	5-15	---	---	---	5-15	---	---
Desert needlegrass	STSP3	5-15	2-10	---	---	5-15	---	---
Bottlebrush squirreltail	SIHY	2-10	---	---	---	2-10	2-10	---
Indian ricegrass	ORHY	2-10	5-20	---	---	2-10	---	---
Bluegrass	POA++	---	---	---	10-30	---	10-30	10-40
Thurber needlegrass	STTH2	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	2-5	---	5-15	---	---	5-10
Perennial forbs	PPFF	5-10	5-10	---	2-5	5-10	5-10	5-10
Shadscale	ATCO	10-20	10-20	---	20-30	10-20	10-20	5-10
Bailey greasewood	SAVEB	5-10	5-15	---	---	5-10	5-10	---
Bud sagebrush	ARSP5	5-10	2-10	---	10-20	5-10	5-10	---
Winterfat	EULA5	2-5	---	---	---	2-5	---	---
Nevada ephedra	EPNE	---	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	---	---	---	---	---	20-30
Other shrubs	SSSS	---	5-10	---	5-10	---	5-15	5-10
Range site number		O27XO19N	O27XO27N	None	O27XO28N	O27XO19N	O27XO30N	O27XO32N
Potential production (lb/acre):								
Favorable years		350	200	---	700	350	400	600
Normal years		200	100	---	500	200	300	400
Unfavorable years		50	50	---	300	50	200	200

191--Theon-Singatse association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Theon	Singatse	1	2	3	4
Galleta	HIJA	5-15	---	---	---	5-15	---
Desert needlegrass	STSP3	5-15	2-10	---	---	5-15	---
Bottlebrush squirreltail	SIHY	2-10	---	2-10	---	2-10	---
Indian ricegrass	ORHY	2-10	5-20	5-10	---	2-10	---
Bluegrass	POA++	---	---	---	---	---	10-40
Thurber needlegrass	STTH2	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	2-5	---	---	---	5-10
Perennial forbs	PPFF	5-10	5-10	2-5	---	5-10	5-10
Shadscale	ATCO	10-20	10-20	---	---	10-20	5-10
Bailey greasewood	SAVEB	5-10	5-15	5-20	---	5-10	---
Bud sagebrush	ARSP5	5-10	2-10	---	---	5-10	---
Winterfat	EULA5	2-5	---	---	---	2-5	---
Nevada ephedra	EPNE	---	2-5	---	---	---	---
Littleleaf horsebrush	TEGL	---	---	5-25	---	---	---
Rubber rabbitbrush	CHNA2	---	---	5-20	---	---	---
Spiny hopsage	GRSP	---	---	5-20	---	---	---
Burrobrush	HYMEN3	---	---	5-10	---	---	---
Fourwing saltbush	ATCA2	---	---	5-10	---	---	---
Black sagebrush	ARARN	---	---	---	---	---	20-30
Other shrubs	SSSS	---	5-10	---	---	---	5-10
Range site number		027X019N	027X027N	027X022N	None	027X019N	027X032N
Potential production (lb/acre):							
Favorable years		350	200	400	---	350	600
Normal years		200	100	200	---	200	400
Unfavorable years		50	50	50	---	50	200

201--Pirouette-Rezave-Rubble land association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Pirouette	Rezave	Rubble land	1	2	3
Bluegrass	POA++	10-30	10-30	---	---	---	10-40
Bottlebrush squirreltail	SIHY	---	2-10	---	---	5-10	---
Indian ricegrass	ORHY	---	---	---	5-20	5-15	---
Desert needlegrass	STSP3	---	---	---	2-10	---	---
Pine bluegrass	POSC	---	---	---	---	5-15	---
Thurber needlegrass	STTH2	---	---	---	---	---	2-10
Other perennial grasses	PPGG	5-15	---	---	2-5	5-10	5-10
Perennial forbs	PPFF	2-5	5-10	---	5-10	5-10	5-10
Shadscale	ATCO	20-30	10-20	---	10-20	---	5-10
Bud sagebrush	ARSP5	10-20	5-10	---	2-10	---	---
Bailey greasewood	SAVEB	---	5-10	---	5-15	---	---
Nevada ephedra	EPNE	---	---	---	2-5	5-10	---
Wyoming big sagebrush	ARTRW	---	---	---	---	10-20	---
Spiny hopsage	GRSP	---	---	---	---	10-20	---
Black sagebrush	ARARN	---	---	---	---	---	20-30
Other shrubs	SSSS	5-10	5-15	---	5-10	---	5-10
Range site number		027X028N	027X030N	None	027X027N	027X008N	027X032N
Potential production (lb/acre):							
Favorable years		700	400	---	200	700	600
Normal years		500	300	---	100	500	400
Unfavorable years		300	200	---	50	300	200

211--Preble Variant-Whirlo association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Preble Variant	Whirlo	1	2
Basin wildrye	ELCI2	5-20	---	20-40	---
Bottlebrush squirreltail	SIHY	2-5	5-15	---	5-10
Indian ricegrass	ORHY	2-5	5-15	---	---
Sandberg bluegrass	POSE	---	2-5	---	---
Needleandthread	STCO4	---	1-3	---	---
Other perennial grasses	PPGG	---	---	---	T-10
Thelypody	THELY	2-4	---	---	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8
Black greasewood	SAVE4	20-30	---	5-15	15-30
Basin big sagebrush	ARTRT	5-15	---	2-10	---
Wyoming big sagebrush	ARTRW	5-10	---	---	---
Spiny hopsage	GRSP	5-15	2-5	---	---
Shadscale	ATCO	---	30-40	---	30-50
Bud sagebrush	ARSP5	---	20-30	---	5-15
Winterfat	EULA5	---	2-5	---	---
Torrey quailbush	ATTO	---	---	30-50	---
Seepweed	SUAED	---	---	---	2-15
Range site number		024X022N	024X002N	024X015N	024X003N
Potential production (lb/acre):					
Favorable years		800	700	1,500	600
Normal years		600	450	1,200	450
Unfavorable years		350	300	800	300

220--Duffer silty clay loam

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Duffer	1	2	3	4
Alkali sacaton	SPAI	40-70	15-30	---	---	---
Inland saltgrass	DISPS2	T-15	5-10	5-10	5-10	---
Basin wildrye	ELCI2	T-5	40-60	5-15	5-15	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	---	---	T-10
Perennial forbs	PPFF	2-8	---	T-5	T-5	2-8
Iodinebush	ALOC2	10-20	---	---	---	---
Saltbush	ATRIP	5-10	---	---	---	---
Black greasewood	SAVE4	2-5	5-15	60-75	60-75	15-30
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Rubber rabbitbrush	CHNA2	---	1-2	---	---	---
Shadscale	ATCO	---	---	---	---	30-50
Bud sagebrush	ARSP5	---	---	---	---	5-15
Seepweed	SUAED	---	---	---	---	2-15
Range site number		O24XO10N	O24XO07N	O24XO11N	O24XO11N	O24XO03N
Potential production (lb/acre):						
Favorable years		450	1,900	500	500	600
Normal years		300	1,400	350	350	450
Unfavorable years		150	800	200	200	300

221--Duffer silty clay loam, occasionally flooded, slightly saline

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Duffer	1	2	3	4
Alkali sacaton	SPAI	15-40	---	15-40	---	---
Alkali muhly	MUAS	10-20	---	10-20	---	---
Alkali bluegrass	POJU	5-15	---	5-15	---	---
Inland saltgrass	DISPS2	5-10	---	5-10	5-10	5-10
Alkali cordgrass	SPGR	5-10	---	5-10	---	---
Basin wildrye	ELCI2	2-5	50-60	2-5	5-15	5-15
Western wheatgrass	AGSM	---	5-15	---	---	---
Arrow-grass	TRIGL	1-3	---	1-3	---	---
Perennial forbs	PPFF	---	2-8	---	T-5	T-5
Silver buffaloberry	SHAR	T-2	---	T-2	---	---
Willow	SALIX	T-2	---	T-2	---	---
Rubber rabbitbrush	CHNA2	T-2	2-5	T-2	---	---
Black greasewood	SAVE4	T-2	2-10	T-2	60-75	60-75
Woods rose	ROWO	T-2	---	T-2	---	---
Basin big sagebrush	ARTRT	---	15-20	---	---	---
Range site number		024X009N	024X006N	024X009N	024X011N	024X011N
Potential production (lb/acre):						
Favorable years		1,500	1,500	1,500	500	500
Normal years		1,000	1,100	1,000	350	350
Unfavorable years		700	600	700	200	200

231--Dun Glen very fine sandy loam, 2 to 4 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Dun Glen	1	2
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15
Indian ricegrass	ORHY	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	---	2-5
Needleandthread	STCO4	1-3	---	1-3
Other perennial grasses	PPGG	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-50	30-40
Bud sagebrush	ARSP5	20-30	5-15	20-30
Spiny hopsage	GRSP	2-5	---	2-5
Winterfat	EULA5	2-5	---	2-5
Black greasewood	SAVE4	---	15-30	---
Seepweed	SUAED	---	2-15	---
Range site number		024X002N	024X003N	024X002N
Potential production (lb/acre):				
Favorable years		700	600	700
Normal years		450	450	450
Unfavorable years		300	300	300

233--Dun Glen very fine sandy loam, 0 to 2 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Dun Glen	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	5-15	2-10
Indian ricegrass	ORHY	5-15	---	5-15	10-20
Sandberg bluegrass	POSE	2-5	---	2-5	---
Needleandthread	STCO4	1-3	---	1-3	---
Other perennial grasses	PPGG	---	T-10	---	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-50	30-40	---
Bud sagebrush	ARSP5	20-30	5-15	20-30	2-5
Spiny hopsage	GRSP	2-5	---	2-5	---
Winterfat	EULA5	2-5	---	2-5	60-70
Black greasewood	SAVE4	---	15-30	---	---
Seepweed	SUAED	---	2-15	---	---
Range site number		024X002N	024X003N	024X002N	024X004N
Potential production (lb/acre):					
Favorable years		700	600	700	500
Normal years		450	450	450	350
Unfavorable years		300	300	300	200

234--Dun Glen silt loam, frequently flooded, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Dun Glen	1	2
Indian ricegrass	ORHY	10-20	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	5-15	5-15
Sandberg bluegrass	POSE	---	2-5	2-5
Needleandthread	STCO4	---	1-3	1-3
Perennial forbs	PPFF	2-8	2-8	2-8
Winterfat	EULA5	60-70	2-5	2-5
Bud sagebrush	ARSP5	2-5	20-30	20-30
Shadscale	ATCO	---	30-40	30-40
Spiny hopsage	GRSP	---	2-5	2-5
Range site number		O24XO04N	O24XO02N	O24XO02N
Potential production (lb/acre):				
Favorable years		500	700	700
Normal years		350	450	450
Unfavorable years		200	300	300

241--Toulon-Mazuma-Bluewing association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Toulon	Mazuma	Bluewing	1	2	3
Bluegrass	POA++	10-30	---	10-30	---	---	---
Bottlebrush squirreltail	SIHY	2-10	---	2-10	2-5	5-10	---
Inland saltgrass	DISPS2	---	5-10	---	5-10	2-5	---
Basin wildrye	ELCI2	---	---	---	5-15	---	---
Alkali sacaton	SPAI	---	---	---	2-5	---	---
Indian ricegrass	ORHY	---	---	---	---	5-10	30-50
Needleandthread	STCO4	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	5-15	---	---	---	2-10
Shadscale	ATCO	10-20	2-10	10-20	---	20-40	---
Bailey greasewood	SAVEB	5-10	---	5-10	---	2-10	---
Bud sagebrush	ARSP5	5-10	---	5-10	---	2-10	---
Black greasewood	SAVE4	---	40-60	---	5-15	5-20	---
Seepweed	SUAED	---	2-5	---	2-5	5-15	---
Torrey quailbush	ATTO	---	---	---	50-70	---	---
Iodinebush	ALOC2	---	---	---	2-5	---	---
Fourwing saltbush	ATCA2	---	---	---	---	---	5-15
Winterfat	EULA5	---	---	---	---	---	2-10
Nevada dalea	PSPO	---	---	---	---	---	2-10
Other shrubs	SSSS	5-15	5-15	5-15	---	---	5-10
Range site number		027X030N	027X025N	027X030N	027X044N	027X024N	027X009N
Potential production (lb/acre):							
Favorable years		400	400	400	600	600	800
Normal years		300	200	300	400	400	450
Unfavorable years		200	50	200	200	200	200

251--Whirlo-Beoska-Oxcorel association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Whirlo	Beoska	Oxcorel	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-15	2-10	5-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-10	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-5	---	---	2-5
Needleandthread	STCO4	1-3	1-3	1-3	1-3	---	---	1-3
Other perennial grasses	PPGG	---	---	---	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-5	2-8	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-40	---	30-50	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	20-30	---	5-15	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-20	---	2-5
Winterfat	EULA5	2-5	2-5	2-5	2-5	---	---	2-5
Littleleaf horsebrush	TEGL	---	---	---	---	5-25	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	5-20	---	---
Bailey greasewood	SAVEB	---	---	---	---	5-20	---	---
Burrobrush	HYMEN3	---	---	---	---	5-10	---	---
Fourwing saltbush	ATCA2	---	---	---	---	5-10	---	---
Black greasewood	SAVE4	---	---	---	---	---	15-30	---
Seepweed	SUAED	---	---	---	---	---	2-15	---
Range site number		024X002N	024X002N	024X002N	024X002N	027X022N	024X003N	024X002N
Potential production (lb/acre):								
Favorable years		700	700	700	700	400	600	700
Normal years		450	450	450	450	200	450	450
Unfavorable years		300	300	300	300	50	300	300

260--Golconda silt loam, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Golconda	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	1-2
Globemallow	SPHAE	---	---	1-2
Phlox	PHLOX	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	---
Wyoming big sagebrush	ARTRW	---	---	30-35
Range site number		024X002N	024X002N	024X020N
Potential production (lb/acre):				
Favorable years		700	700	700
Normal years		450	450	450
Unfavorable years		300	300	300

261--Golconda silt loam, 8 to 15 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Golconda	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-10	5-15	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-10	2-5	2-5
Needleandthread	STCO4	1-3	---	1-3	1-3
Thurber needlegrass	STTH2	---	10-20	---	---
Tapertip hawksbeard	CRAC2	---	1-2	---	---
Globemallow	SPHAE	---	1-2	---	---
Phlox	PHLOX	---	1-2	---	---
Other perennial forbs	PPFF	2-8	---	2-8	2-8
Shadscale	ATCO	30-40	---	30-40	30-40
Bud sagebrush	ARSP5	20-30	---	20-30	20-30
Spiny hopsage	GRSP	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	2-5
Wyoming big sagebrush	ARTRW	---	30-35	---	---
Range site number		O24XO02N	O24XO20N	O24XO02N	O24XO02N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

270--Goldrun fine sand, 4 to 15 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Goldrun	1	2	3	4
Indian ricegrass	ORHY	20-40	2-5	5-15	2-5	5-15
Needleandthread	STCO4	5-15	---	---	---	1-3
Basin wildrye	ELCI2	2-10	5-20	---	5-20	---
Thickspike wheatgrass	AGDA	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	2-10	2-5	5-15
Thurber needlegrass	STTH2	---	---	10-20	---	---
Sandberg bluegrass	POSE	---	---	2-10	---	2-5
Lemon scurfpea	PSLA	2-5	---	---	---	---
Tufted eveningprimrose	OECE2	2-4	---	---	---	---
Thelypody	THELY	---	2-4	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	1-2	---	---
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	---	---	2-8
Basin big sagebrush	ARTRT	10-20	5-15	---	5-15	---
Spiny hopsage	GRSP	5-10	5-15	5-15	5-15	2-5
Fourwing saltbush	ATCA2	2-10	---	---	---	---
Hairy horsebrush	TECO2	5-8	---	---	---	---
Black greasewood	SAVE4	2-8	20-30	---	20-30	---
Rubber rabbitbrush	CHNA2	1-5	---	---	---	---
Wyoming big sagebrush	ARTRW	---	5-10	30-35	5-10	---
Shadscale	ATCO	---	---	---	---	30-40
Bud sagebrush	ARSP5	---	---	---	---	20-30
Winterfat	EULA5	---	---	---	---	2-5
Range site number		024X001N	024X022N	024X020N	024X022N	024X002N
Potential production (lb/acre):						
Favorable years		800	800	700	800	700
Normal years		500	600	450	600	450
Unfavorable years		300	350	300	350	300

281--Golsum-Spinlin-Harcany association

(An X indicates that the named plant is in the potential native woodland understory and the percent is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Golsum	Spinlin	Harcany	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	15-30	5-10	---	---	---	---
Basin wildrye	ELCI2	5-10	---	---	---	---	---	50-60
Mountain brome	BRCA5	2-15	---	10-15	---	---	X	---
Thurber needlegrass	STTH2	2-5	2-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	5-10	---	---	---
Idaho fescue	FEID	2-5	25-50	5-15	10-20	---	X	---
Spike fescue	LEKI2	---	2-10	2-15	---	---	---	---
Slender wheatgrass	AGTR	---	---	10-15	---	---	X	---
Bulbous oniongrass	MEBU	---	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	---	2-5	---	---	---	5-15
Webber ricegrass	STWE	---	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Bluegrass	POA++	---	---	---	---	---	X	---
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	X	---
Tapertip hawksbeard	CRAC2	2-5	---	---	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Geranium	GERAN	---	---	2-5	---	---	---	---
Groundsel	SENEC	---	---	2-5	---	---	---	---
Lupine	LUPIN	---	---	2-5	---	---	---	2-5
Goldenweed	HAPLO2	---	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	---	2-5	---	---	---
Meadowrue	THALI2	---	---	---	---	---	X	---
Other perennial forbs	PPFF	---	---	---	---	---	X	---
Quaking aspen	POTRT	---	---	---	---	---	X	---
Range site number		024X029N	024X027N	024X032N	024X016N	None	025X065N	025X003N
Potential production (lb/acre):								
Favorable years		1,500	1,200	2,200	350	---	800	2,500
Normal years		1,100	800	1,700	250	---	600	1,900
Unfavorable years		800	600	1,200	150	---	400	1,200

321--Humboldt silty clay loam, slightly saline-sodic

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Humboldt	1	2	3
Creeping wildrye	ELTR3	15-30	---	15-30	---
Basin wildrye	ELCI2	15-30	50-60	15-30	40-60
Nevada bluegrass	PONE3	5-10	---	5-10	---
Inland saltgrass	DISPS2	5-10	---	5-10	5-10
Mat muhly	MURI	2-10	---	2-10	---
Western wheatgrass	AGSM	---	5-15	---	---
Alkali sacaton	SPAI	---	---	---	15-30
Sierra clover	TRWO	2-5	---	2-5	---
Other perennial forbs	PPFF	5-10	2-8	5-10	---
Willow	SALIX	5-10	---	5-10	---
Basin big sagebrush	ARTRT	2-5	15-20	2-5	---
Silver sagebrush	ARCA13	2-5	---	2-5	---
Black greasewood	SAVE4	---	2-10	---	5-15
Rubber rabbitbrush	CHNA2	---	2-5	---	1-2
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Range site number		025X001N	024X006N	025X001N	024X007N
Potential production (lb/acre):					
Favorable years		3,000	1,500	3,000	1,900
Normal years		2,500	1,100	2,500	1,400
Unfavorable years		1,800	600	1,800	800

322--Humboldt silty clay loam, strongly saline-sodic

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Humboldt	1	2	3
Basin wildrye	ELCI2	40-60	40-60	15-30	15-30
Alkali sacaton	SPAI	15-30	15-30	---	---
Inland saltgrass	DISPS2	5-10	5-10	5-10	5-10
Creeping wildrye	ELTR3	---	---	15-30	15-30
Nevada bluegrass	PONE3	---	---	5-10	5-10
Mat muhly	MURI	---	---	2-10	2-10
Sierra clover	TRWO	---	---	2-5	2-5
Other perennial forbs	PPFF	---	---	5-10	5-10
Black greasewood	SAVE4	5-15	5-15	---	---
Alkali rabbitbrush	CHAL9	1-2	1-2	---	---
Rubber rabbitbrush	CHNA2	1-2	1-2	---	---
Willow	SALIX	---	---	5-10	5-10
Basin big sagebrush	ARTRT	---	---	2-5	2-5
Silver sagebrush	ARCA13	---	---	2-5	2-5
Range site number		024X007N	024X007N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		1,900	1,900	3,000	3,000
Normal years		1,400	1,400	2,500	2,500
Unfavorable years		800	800	1,800	1,800

330--McConnel loam, 0 to 2 percent slopes

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		McConnel	1	2
Thurber needlegrass	STTH2	10-20	10-20	10-20
Indian ricegrass	ORHY	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	2-10
Sandberg bluegrass	POSE	2-10	2-10	2-10
Tapertip hawksbeard	CRAC2	1-2	1-2	1-2
Globemallow	SPHAE	1-2	1-2	1-2
Phlox	PHLOX	1-2	1-2	1-2
Wyoming big sagebrush	ARTRW	30-35	30-35	30-35
Spiny hopsage	GRSP	5-15	5-15	5-15
Range site number		024X020N	024X020N	024X020N
Potential production (lb/acre):				
Favorable years		700	700	700
Normal years		450	450	450
Unfavorable years		300	300	300

331--McConnel gravelly fine sandy loam, 4 to 8 percent slopes

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		McConnel	1	2
Thurber needlegrass	STTH2	10-20	10-20	10-20
Indian ricegrass	ORHY	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	2-10
Sandberg bluegrass	POSE	2-10	2-10	2-10
Tapertip hawksbeard	CRAC2	1-2	1-2	1-2
Globemallow	SPHAE	1-2	1-2	1-2
Phlox	PHLOX	1-2	1-2	1-2
Wyoming big sagebrush	ARTRW	30-35	30-35	30-35
Spiny hopsage	GRSP	5-15	5-15	5-15
Range site number		024X020N	024X020N	024X020N
Potential production (lb/acre):				
Favorable years		700	700	700
Normal years		450	450	450
Unfavorable years		300	300	300

360--Needle Peak silt loam, slightly saline-sodic

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Needle Peak	1	2	3	4
Basin wildrye	ELCI2	50-60	40-60	---	---	---
Western wheatgrass	AGSM	5-15	---	---	---	---
Alkali sacaton	SPAI	---	15-30	---	---	---
Inland saltgrass	DISPS2	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	5-15	5-15
Indian ricegrass	ORHY	---	---	---	5-15	5-15
Sandberg bluegrass	POSE	---	---	---	2-5	2-5
Needleandthread	STCO4	---	---	---	1-3	1-3
Other perennial grasses	PPGG	---	---	T-10	---	---
Perennial forbs	PPFF	2-8	---	2-8	2-8	2-8
Basin big sagebrush	ARTRT	15-20	---	---	---	---
Black greasewood	SAVE4	2-10	5-15	15-30	---	---
Rubber rabbitbrush	CHNA2	2-5	1-2	---	---	---
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Shadscale	ATCO	---	---	30-50	30-40	30-40
Bud sagebrush	ARSP5	---	---	5-15	20-30	20-30
Seepweed	SUAED	---	---	2-15	---	---
Spiny hopsage	GRSP	---	---	---	2-5	2-5
Winterfat	EULA5	---	---	---	2-5	2-5
Range site number		024X006N	024X007N	024X003N	024X002N	024X002N
Potential production (lb/acre):						
Favorable years		1,500	1,900	600	700	700
Normal years		1,100	1,400	450	450	450
Unfavorable years		600	800	300	300	300

380--Ninch fine sand, 0 to 15 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Ninch	1	2
Indian ricegrass	ORHY	20-40	20-40	2-5
Needleandthread	STCO4	5-15	5-15	---
Basin wildrye	ELCI2	2-10	2-10	5-20
Thickspike wheatgrass	AGDA	2-10	2-10	---
Bottlebrush squirreltail	SIHY	---	---	2-5
Lemon scurfpea	PSLA	2-5	2-5	---
Tufted eveningprimrose	OECE2	2-4	2-4	---
Thelypody	THELY	---	---	2-4
Basin big sagebrush	ARTRT	10-20	10-20	5-15
Spiny hopsage	GRSP	5-10	5-10	5-15
Fourwing saltbush	ATCA2	2-10	2-10	---
Hairy horsebrush	TECO2	5-8	5-8	---
Black greasewood	SAVE4	2-8	2-8	20-30
Rubber rabbitbrush	CHNA2	1-5	1-5	---
Wyoming big sagebrush	ARTRW	---	---	5-10
Range site number		024X001N	024X001N	024X022N
Potential production (lb/acre):				
Favorable years		800	800	800
Normal years		500	500	600
Unfavorable years		300	300	350

400--Orovada loam, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Orovada	1	2	3	4
Thurber needlegrass	STTH2	10-20	10-20	---	10-20	10-20
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	5-15	2-10	2-10
Sandberg bluegrass	POSE	2-10	2-10	2-5	2-10	2-10
Needleandthread	STCO4	---	---	1-3	---	---
Tapertip hawksbeard	CRAC2	1-2	1-2	---	1-2	1-2
Globemallow	SPHAE	1-2	1-2	---	1-2	1-2
Phlox	PHLOX	1-2	1-2	---	1-2	1-2
Other perennial forbs	PPFF	---	---	2-8	---	---
Wyoming big sagebrush	ARTRW	30-35	30-35	---	30-35	30-35
Spiny hopsage	GRSP	5-15	5-15	2-5	5-15	5-15
Shadscale	ATCO	---	---	30-40	---	---
Bud sagebrush	ARSP5	---	---	20-30	---	---
Winterfat	EULA5	---	---	2-5	---	---
Range site number		024X020N	024X020N	024X002N	024X020N	024X020N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

406--Orovada very fine sandy loam, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Orovada	1	2	3
Thurber needlegrass	STTH2	10-20	10-20	---	---
Indian ricegrass	ORHY	5-15	5-15	---	2-5
Bottlebrush squirreltail	SIHY	2-10	2-10	---	2-5
Sandberg bluegrass	POSE	2-10	2-10	---	---
Basin wildrye	ELCI2	---	---	50-60	5-20
Western wheatgrass	AGSM	---	---	5-15	---
Tapertip hawksbeard	CRAC2	1-2	1-2	---	---
Globemallow	SPHAE	1-2	1-2	---	---
Phlox	PHLOX	1-2	1-2	---	---
Thelypody	THELY	---	---	---	2-4
Other perennial forbs	PPFF	---	---	2-8	---
Wyoming big sagebrush	ARTRW	30-35	30-35	---	5-10
Spiny hopsage	GRSP	5-15	5-15	---	5-15
Basin big sagebrush	ARTRT	---	---	15-20	5-15
Black greasewood	SAVE4	---	---	2-10	20-30
Rubber rabbitbrush	CHNA2	---	---	2-5	---
Range site number		024X020N	024X020N	024X006N	024X022N
Potential production (lb/acre):					
Favorable years		700	700	1,500	800
Normal years		450	450	1,100	600
Unfavorable years		300	300	600	350

431--Preble silt loam, strongly saline-sodic

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Preble	1	2	3
Basin wildrye	ELCI2	5-15	5-20	2-10	40-60
Inland saltgrass	DISPS2	5-10	---	---	5-10
Bottlebrush squirreltail	SIHY	---	2-5	---	---
Indian ricegrass	ORHY	---	2-5	20-40	---
Needleandthread	STCO4	---	---	5-15	---
Thickspike wheatgrass	AGDA	---	---	2-10	---
Alkali sacaton	SPAI	---	---	---	15-30
Thelypody	THELY	---	2-4	---	---
Lemon scurfpea	PSLA	---	---	2-5	---
Tufted eveningprimrose	OECE2	---	---	2-4	---
Other perennial forbs	PPFF	T-5	---	---	---
Black greasewood	SAVE4	60-75	20-30	2-8	5-15
Basin big sagebrush	ARTRT	---	5-15	10-20	---
Wyoming big sagebrush	ARTRW	---	5-10	---	---
Spiny hopsage	GRSP	---	5-15	5-10	---
Fourwing saltbush	ATCA2	---	---	2-10	---
Hairy horsebrush	TECO2	---	---	5-8	---
Rubber rabbitbrush	CHNA2	---	---	1-5	1-2
Alkali rabbitbrush	CHAL9	---	---	---	1-2
Range site number		024X011N	024X022N	024X001N	024X007N
Potential production (lb/acre):					
Favorable years		500	800	800	1,900
Normal years		350	600	500	1,400
Unfavorable years		200	350	300	800

451--Pumper loam

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Pumper	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	2-10	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-10	2-5	2-5	2-10
Needleandthread	STCO4	1-3	---	1-3	1-3	---
Thurber needlegrass	STTH2	---	10-20	---	---	10-20
Tapertip hawksbeard	CRAC2	---	1-2	---	---	1-2
Globemallow	SPHAE	---	1-2	---	---	1-2
Phlox	PHLOX	---	1-2	---	---	1-2
Other perennial forbs	PPFF	2-8	---	2-8	2-8	---
Shadscale	ATCO	30-40	---	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	---	20-30	20-30	---
Spiny hopsage	GRSP	2-5	5-15	2-5	2-5	5-15
Winterfat	EULA5	2-5	---	2-5	2-5	---
Wyoming big sagebrush	ARTRW	---	30-35	---	---	30-35
Range site number		O24XO02N	O24XO20N	O24XO02N	O24XO02N	O24XO20N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

470--Raglan silt loam

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Raglan	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	5-10
Indian ricegrass	ORHY	5-15	5-15	---	---
Sandberg bluegrass	POSE	2-5	2-5	---	---
Needleandthread	STCO4	1-3	1-3	---	---
Basin wildrye	ELCI2	---	---	50-60	---
Western wheatgrass	AGSM	---	---	5-15	---
Other perennial grasses	PPGG	---	---	---	T-10
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-40	30-40	---	30-50
Bud sagebrush	ARSP5	20-30	20-30	---	5-15
Spiny hopsage	GRSP	2-5	2-5	---	---
Winterfat	EULA5	2-5	2-5	---	---
Basin big sagebrush	ARTRT	---	---	15-20	---
Black greasewood	SAVE4	---	---	2-10	15-30
Rubber rabbitbrush	CHNA2	---	---	2-5	---
Seepweed	SUAED	---	---	---	2-15
Range site number		024X002N	024X002N	024X006N	024X003N
Potential production (lb/acre):					
Favorable years		700	700	1,500	600
Normal years		450	450	1,100	450
Unfavorable years		300	300	600	300

471--Raglan silt loam, moderately saline-sodic

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Raglan	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-15	---	5-10
Indian ricegrass	ORHY	---	5-15	---	---
Sandberg bluegrass	POSE	---	2-5	---	---
Needleandthread	STCO4	---	1-3	---	---
Basin wildrye	ELCI2	---	---	50-60	---
Western wheatgrass	AGSM	---	---	5-15	---
Other perennial grasses	PPGG	T-10	---	---	T-10
Perennial forbs	PPFF	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-40	---	30-50
Black greasewood	SAVE4	15-30	---	2-10	15-30
Bud sagebrush	ARSP5	5-15	20-30	---	5-15
Seepweed	SUAED	2-15	---	---	2-15
Spiny hopsage	GRSP	---	2-5	---	---
Winterfat	EULA5	---	2-5	---	---
Basin big sagebrush	ARTRT	---	---	15-20	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---
Range site number		024X003N	024X002N	024X006N	024X003N
Potential production (lb/acre):					
Favorable years		600	700	1,500	600
Normal years		450	450	1,100	450
Unfavorable years		300	300	600	300

480--Rebel loam, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rebel	1	2	3
Thurber needlegrass	STTH2	10-20	10-20	---	10-20
Indian ricegrass	ORHY	5-15	5-15	---	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	---	2-10
Sandberg bluegrass	POSE	2-10	2-10	---	2-10
Basin wildrye	ELCI2	---	---	50-60	---
Western wheatgrass	AGSM	---	---	5-15	---
Tapertip hawksbeard	CRAC2	1-2	1-2	---	1-2
Globemallow	SPHAE	1-2	1-2	---	1-2
Phlox	PHLOX	1-2	1-2	---	1-2
Other perennial forbs	PPFF	---	---	2-8	---
Wyoming big sagebrush	ARTRW	30-35	30-35	---	30-35
Spiny hopsage	GRSP	5-15	5-15	---	5-15
Basin big sagebrush	ARTRT	---	---	15-20	---
Black greasewood	SAVE4	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---
Range site number		024X020N	024X020N	024X006N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	1,500	700
Normal years		450	450	1,100	450
Unfavorable years		300	300	600	300

481--Rebel loam, 2 to 4 percent slopes

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Rebel	1	2	3
Thurber needlegrass	STTH2	10-20	10-20	10-20	10-20
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	2-10	2-10
Sandberg bluegrass	POSE	2-10	2-10	2-10	2-10
Phlox	PHLOX	1-2	1-2	1-2	1-2
Tapertip hawksbeard	CRAC2	1-2	1-2	1-2	1-2
Globemallow	SPHAE	1-2	1-2	1-2	1-2
Wyoming big sagebrush	ARTRW	30-35	30-35	30-35	30-35
Spiny hopsage	GRSP	5-15	5-15	5-15	5-15
Range site number		024X020N	024X020N	024X020N	024X020N
Potential production (lb/acre):					
Favorable years		700	700	700	700
Normal years		450	450	450	450
Unfavorable years		300	300	300	300

482--Rebel loam, rarely flooded, 0 to 2 percent slopes

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Rebel	1
Basin wildrye	ELCI2	10-20	10-20
Indian ricegrass	ORHY	2-10	2-10
Bottlebrush squirreltail	SIHY	2-5	2-5
Sandberg bluegrass	POSE	2-5	2-5
Spiny hopsage	GRSP	15-30	15-30
Basin big sagebrush	ARTRT	15-25	15-25
Black greasewood	SAVE4	2-10	2-10
Anderson peachbrush	PRAN2	2-10	2-10
Rubber rabbitbrush	CHNA2	2-5	2-5
Range site number		024X041N	024X041N
Potential production (lb/acre):			
Favorable years		1,000	1,000
Normal years		800	800
Unfavorable years		600	600

500--Pocker silty clay loam

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Pocker	1	2	3	4
Basin wildrye	ELCI2	50-60	40-60	---	---	50-60
Western wheatgrass	AGSM	5-15	---	---	---	5-15
Alkali sacaton	SPAI	---	15-30	---	---	---
Inland saltgrass	DISPS2	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	5-15	---
Indian ricegrass	ORHY	---	---	---	5-15	---
Sandberg bluegrass	POSE	---	---	---	2-5	---
Needleandthread	STCO4	---	---	---	1-3	---
Other perennial grasses	PPGG	---	---	T-10	---	---
Perennial forbs	PPFF	2-8	---	2-8	2-8	2-8
Basin big sagebrush	ARTRT	15-20	---	---	---	15-20
Black greasewood	SAVE4	2-10	5-15	15-30	---	2-10
Rubber rabbitbrush	CHNA2	2-5	1-2	---	---	2-5
Alkali rabbitbrush	CHAL9	---	1-2	---	---	---
Shadscale	ATCO	---	---	30-50	30-40	---
Bud sagebrush	ARSP5	---	---	5-15	20-30	---
Seepweed	SUAED	---	---	2-15	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---
Winterfat	EULA5	---	---	---	2-5	---
Range site number		024X006N	024X007N	024X003N	024X002N	024X006N
Potential production (lb/acre):						
Favorable years		1,500	1,900	600	700	1,500
Normal years		1,100	1,400	450	450	1,100
Unfavorable years		600	800	300	300	600

561--Sonoma silt loam, occasionally flooded, strongly saline-sodic

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Sonoma	1	2	3
Basin wildrye	ELCI2	40-60	15-30	15-30	15-30
Alkali sacaton	SPAI	15-30	---	---	---
Inland saltgrass	DISPS2	5-10	5-10	5-10	5-10
Creeping wildrye	ELTR3	---	15-30	15-30	15-30
Nevada bluegrass	PONE3	---	5-10	5-10	5-10
Mat muhly	MURI	---	2-10	2-10	2-10
Sierra clover	TRWO	---	2-5	2-5	2-5
Other perennial forbs	PPFF	---	5-10	5-10	5-10
Black greasewood	SAVE4	5-15	---	---	---
Alkali rabbitbrush	CHAL9	1-2	---	---	---
Rubber rabbitbrush	CHNA2	1-2	---	---	---
Willow	SALIX	---	5-10	5-10	5-10
Basin big sagebrush	ARTRT	---	2-5	2-5	2-5
Silver sagebrush	ARCA13	---	2-5	2-5	2-5
Range site number		024X007N	025X001N	025X001N	025X001N
Potential production (lb/acre):					
Favorable years		1,900	3,000	3,000	3,000
Normal years		1,400	2,500	2,500	2,500
Unfavorable years		800	1,800	1,800	1,800

562--Sonoma silt loam, drained, strongly saline-sodic

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Sonoma	1	2	3
Basin wildrye	ELCI2	5-15	15-20	20-40	50-60
Inland saltgrass	DISPS2	5-10	2-10	---	---
Bottlebrush squirreltail	SIHY	---	2-10	---	---
Western wheatgrass	AGSM	---	---	---	5-15
Perennial forbs	PPFF	T-5	2-8	2-8	2-8
Black greasewood	SAVE4	60-75	40-60	5-15	2-10
Torrey quailbush	ATTO	---	---	30-50	---
Basin big sagebrush	ARTRT	---	---	2-10	15-20
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Range site number		024X011N	024X008N	024X015N	024X006N
Potential production (lb/acre):					
Favorable years		500	800	1,500	1,500
Normal years		350	600	1,200	1,100
Unfavorable years		200	400	800	600

563--Sondoa-Swingler-Isolde association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Sondoa	Swingler	Isolde	1	2	3	4
Inland saltgrass	DISPS2	5-10	5-10	---	10-20	---	---	2-5
Indian ricegrass	ORHY	---	---	10-20	---	---	40-50	5-10
Needleandthread	STCO4	---	---	5-10	---	---	10-20	---
Alkali sacaton	SPAI	---	---	---	20-30	---	---	---
Basin wildrye	ELCI2	---	---	---	5-15	---	2-5	---
Creeping wildrye	ELTR3	---	---	---	5-10	---	---	---
Baltic rush	JUBA	---	---	---	5-10	---	---	---
Sand dropseed	SPCR	---	---	---	---	---	1-2	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	---	5-10
Other perennial grasses	PPGG	5-15	5-15	2-5	---	---	---	---
Perennial forbs	PPFF	3-7	3-7	2-5	5-10	---	5-10	3-7
Black greasewood	SAVE4	40-60	40-60	10-40	5-10	---	10-15	5-20
Shadscale	ATCO	2-10	2-10	---	---	---	---	20-40
Seepweed	SUAED	2-5	2-5	---	2-5	---	---	5-15
Iodinebush	ALOC2	---	---	---	2-5	---	---	---
Winterfat	EULA5	---	---	---	---	---	5-10	---
Nevada dalea	PSPO	---	---	---	---	---	2-5	---
Bailey greasewood	SAVEB	---	---	---	---	---	---	2-10
Bud sagebrush	ARSP5	---	---	---	---	---	---	2-10
Other shrubs	SSSS	5-15	5-15	5-20	---	---	---	---
Range site number		O27XO25N	O27XO25N	O27XO16N	O27XOO5N	None	O27XO12N	O27XO24N
Potential production (lb/acre):								
Favorable years		400	400	300	2,000	---	500	600
Normal years		200	200	200	1,500	---	400	400
Unfavorable years		50	50	50	1,000	---	300	200

581--Sumine-Gosumi-Nomara association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Sumine	Gosumi	Nomara	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	15-30	20-30	---	---	X	---
Basin wildrye	ELCI2	5-10	---	2-15	---	---	---	50-60
Mountain brome	BRCA5	2-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	2-10	2-10	---	---	X	---
Bottlebrush squirreltail	SIHY	2-5	---	---	5-10	---	X	---
Idaho fescue	FEID	2-5	25-50	20-40	10-20	---	---	---
Spike fescue	LEKI2	---	2-10	---	---	---	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Bluegrass	POA++	---	---	---	---	---	X	---
Indian ricegrass	ORHY	---	---	---	---	---	X	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	---	X	---
Tapertip hawksbeard	CRAC2	2-5	---	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	1-5	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	---	2-5	---	---	---
Lupine	LUPIN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	---	X	---
Mountain big sagebrush	ARVA2	5-15	---	5-15	1-5	---	---	---
Low sagebrush	ARAR8	---	10-20	---	5-15	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	X	---
Ephedra	EPHED	---	---	---	---	---	X	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	X	---
Utah juniper	JUOS	---	---	---	---	---	X	---
Range site number		024X029N	024X027N	024X021N	024X016N	None	024X052N	025X003N
Potential production (lb/acre):								
Favorable years		1,500	1,200	1,400	350	---	500	2,500
Normal years		1,100	800	1,000	250	---	350	1,900
Unfavorable years		800	600	700	150	---	200	1,200

591--Trunk-Hoot association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Trunk	Hoot	1	2	3	4
Thurber needlegrass	STTH2	20-50	---	10-20	20-50	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10	---	---	2-10
Indian ricegrass	ORHY	---	5-15	5-15	---	---	2-5
Sandberg bluegrass	POSE	---	2-5	2-10	---	---	1-3
Needleandthread	STCO4	---	1-3	---	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	1-5	---
Desert needlegrass	STSP3	---	---	---	---	---	2-10
Balsamroot	BALSA	2-4	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	---	1-2	2-4	---	---
Globemallow	SPHAE	---	---	1-2	---	---	---
Phlox	PHLOX	---	---	1-2	---	---	---
Lupine	LUPIN	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	2-8	---	---	---	2-8
Wyoming big sagebrush	ARTRW	15-20	---	30-35	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	---	---
Shadscale	ATCO	---	30-40	---	---	---	30-50
Bud sagebrush	ARSP5	---	20-30	---	---	---	15-30
Winterfat	EULA5	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	10-15	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Other shrubs	SSSS	2-10	---	---	2-10	---	---
Range site number		024X005N	024X002N	024X020N	024X005N	025X003N	024X025N
Potential production (lb/acre):							
Favorable years		800	700	700	800	2,500	250
Normal years		600	450	450	600	1,900	150
Unfavorable years		400	300	300	400	1,200	75

592--Trunk-Pocan association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Trunk	Pocan	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	2-5	2-10	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	20-50	20-30	---	---
Basin wildrye	ELCI2	---	---	5-10	2-15	---	50-60
Mountain brome	BRCA5	---	---	2-15	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	---	---	---
Idaho fescue	FEID	---	---	2-5	20-40	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Balsamroot	BALSA	2-4	2-4	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-5	1-5	---	---
Arrowleaf balsamroot	BASA3	---	---	2-5	1-5	---	---
Lupine	LUPIN	---	---	---	---	---	2-5
Wyoming big sagebrush	ARTRW	15-20	15-20	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	---	---
Mountain big sagebrush	ARTRV	---	---	5-15	5-15	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	---	---	---	---
Range site number		024X005N	024X005N	024X029N	024X021N	None	025X003N
Potential production (lb/acre):							
Favorable years		800	800	1,500	1,400	---	2,500
Normal years		600	600	1,100	1,000	---	1,900
Unfavorable years		400	400	800	700	---	1,200

596--Trunk-Burrita association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Trunk	Burrita	1	2
Thurber needlegrass	STTH2	20-50	20-50	---	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-15	---
Indian ricegrass	ORHY	---	---	5-15	---
Sandberg bluegrass	POSE	---	---	2-5	---
Needleandthread	STCO4	---	---	1-3	---
Balsamroot	BALSA	2-4	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---
Other perennial forbs	PPFF	---	---	2-8	---
Wyoming big sagebrush	ARTRW	15-20	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Shadscale	ATCO	---	---	30-40	---
Bud sagebrush	ARSP5	---	---	20-30	---
Winterfat	EULA5	---	---	2-5	---
Other shrubs	SSSS	2-10	2-10	---	---
Range site number		024X005N	024X005N	024X002N	None
Potential production (lb/acre):					
Favorable years		800	800	700	---
Normal years		600	600	450	---
Unfavorable years		400	400	300	---

598--Trunk-Oxcorel Variant-Bojo association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Trunk	Oxcorel Variant	Bojo	1	2	3	4
Thurber needlegrass	STTH2	20-50	---	2-5	2-5	---	10-15	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10	2-10	---	---	---
Indian ricegrass	ORHY	---	5-15	2-10	2-10	---	10-15	---
Sandberg bluegrass	POSE	---	2-5	2-5	2-5	---	---	---
Needleandthread	STCO4	---	1-3	---	---	---	---	---
Webber ricegrass	STWE	---	---	2-10	2-10	---	---	---
Desert needlegrass	STSP3	---	---	2-5	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	---	1-5	---	---
Bluegrass	POA++	---	---	---	---	---	2-10	---
Other perennial grasses	PPGG	---	---	---	---	---	5-20	---
Balsamroot	BALSA	2-4	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	---	---	---
Eriogonum	ERIOG	---	---	1-2	1-2	---	---	---
Hawksbeard	CREPI	---	---	1-2	1-2	---	---	---
Lupine	LUPIN	---	---	---	---	2-5	---	---
Globemallow	SPHAE	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	2-8	---	---	---	---	---
Wyoming big sagebrush	ARTRW	15-20	---	10-25	10-25	---	---	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	5-15	---	---	---
Shadscale	ATCO	---	30-40	10-25	10-25	---	---	---
Bud sagebrush	ARSP5	---	20-30	2-5	2-5	---	---	---
Winterfat	EULA5	---	2-5	---	---	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	10-15	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---	---
Black sagebrush	ARARN	---	---	---	---	---	25-35	---
Other shrubs	SSSS	2-10	---	---	---	---	5-35	---
Range site number		024X005N	024X002N	024X026N	024X026N	025X003N	024X030N	None
Potential production (lb/acre):								
Favorable years		800	700	400	400	2,500	500	---
Normal years		600	450	300	300	1,900	350	---
Unfavorable years		400	300	200	200	1,200	250	---

599--Trunk-Burrita-Rock outcrop association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Trunk	Burrita	Rock outcrop	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	---	15-20	---	2-5
Bluebunch wheatgrass	AGSP	5-10	5-10	---	15-20	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	2-10
Sandberg bluegrass	POSE	---	---	---	5-8	---	2-5
Pine bluegrass	POSC	---	---	---	5-8	---	2-5
Cusick bluegrass	POCU3	---	---	---	5-8	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	2-10
Indian ricegrass	ORHY	---	---	---	---	---	2-10
Desert needlegrass	STSP3	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	---	T-10	---
Balsamroot	BALSA	2-4	2-4	---	2-5	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	---	---
Eriogonum	ERIOG	---	---	---	1-3	---	1-2
Phlox	PHLOX	---	---	---	1-3	---	---
Hawksbeard	CREPI	---	---	---	---	---	1-2
Other perennial forbs	PPFF	---	---	---	---	2-8	---
Wyoming big sagebrush	ARTRW	15-20	15-20	---	---	---	10-25
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	2-5
Spiny hopsage	GRSP	2-5	2-5	---	---	---	5-15
Low sagebrush	ARAR8	---	---	---	20-30	---	---
Shadscale	ATCO	---	---	---	---	30-50	10-25
Black greasewood	SAVE4	---	---	---	---	15-30	---
Bud sagebrush	ARSP5	---	---	---	---	5-15	2-5
Seepweed	SUAED	---	---	---	---	2-15	---
Other shrubs	SSSS	2-10	2-10	---	---	---	---
Range site number		024X005N	024X005N	None	024X018N	024X003N	024X026N
Potential production (lb/acre):							
Favorable years		800	800	---	700	600	400
Normal years		600	600	---	500	450	300
Unfavorable years		400	400	---	300	300	200

600--Valmy fine sandy loam, 0 to 2 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Valmy	1	2
Basin wildrye	ELCI2	5-20	5-20	---
Bottlebrush squirreltail	SIHY	2-5	2-5	5-15
Indian ricegrass	ORHY	2-5	2-5	5-15
Sandberg bluegrass	POSE	---	---	2-5
Needleandthread	STCO4	---	---	1-3
Thelypody	THELY	2-4	2-4	---
Other perennial forbs	PPFF	---	---	2-8
Black greasewood	SAVE4	20-30	20-30	---
Basin big sagebrush	ARTRT	5-15	5-15	---
Wyoming big sagebrush	ARTRW	5-10	5-10	---
Spiny hopsage	GRSP	5-15	5-15	2-5
Shadscale	ATCO	---	---	30-40
Bud sagebrush	ARSP5	---	---	20-30
Winterfat	EULA5	---	---	2-5
Range site number		O24XO22N	O24XO22N	O24XOO2N
Potential production (lb/acre):				
Favorable years		800	800	700
Normal years		600	600	450
Unfavorable years		350	350	300

610--Weso very fine sandy loam, 0 to 2 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Weso	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-10	2-5	2-10
Indian ricegrass	ORHY	5-15	---	2-5	10-20
Sandberg bluegrass	POSE	2-5	---	---	---
Needleandthread	STCO4	1-3	---	---	---
Basin wildrye	ELCI2	---	---	5-20	---
Other perennial grasses	PPGG	---	T-10	---	---
Thelypody	THELY	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-50	---	---
Bud sagebrush	ARSP5	20-30	5-15	---	2-5
Spiny hopsage	GRSP	2-5	---	5-15	---
Winterfat	EULA5	2-5	---	---	60-70
Black greasewood	SAVE4	---	15-30	20-30	---
Seepweed	SUAED	---	2-15	---	---
Basin big sagebrush	ARTRT	---	---	5-15	---
Wyoming big sagebrush	ARTRW	---	---	5-10	---
Range site number		024X002N	024X003N	024X022N	024X004N
Potential production (lb/acre):					
Favorable years		700	600	800	500
Normal years		450	450	600	350
Unfavorable years		300	300	350	200

614--Weso silt loam, moderately saline-sodic, 0 to 2 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Weso	1	2
Bottlebrush squirreltail	SIHY	5-10	5-15	5-10
Indian ricegrass	ORHY	---	5-15	---
Sandberg bluegrass	POSE	---	2-5	---
Needleandthread	STCO4	---	1-3	---
Other perennial grasses	PPGG	T-10	---	T-10
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-50	30-40	30-50
Black greasewood	SAVE4	15-30	---	15-30
Bud sagebrush	ARSP5	5-15	20-30	5-15
Seepweed	SUAED	2-15	---	2-15
Spiny hopsage	GRSP	---	2-5	---
Winterfat	EULA5	---	2-5	---
Range site number		024X003N	024X002N	024X003N
Potential production (lb/acre):				
Favorable years		600	700	600
Normal years		450	450	450
Unfavorable years		300	300	300

615--Weso-Misad-Beoska association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Weso	Misad	Beoska	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	5-10	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	---	---	10-20	---
Other perennial grasses	PPGG	---	---	---	T-10	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	30-50	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	5-15	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	---	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5	---	2-5
Black greasewood	SAVE4	---	---	---	15-30	---	---	---
Seepweed	SUAED	---	---	---	2-15	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	30-35	---
Range site number		024X002N	024X002N	024X002N	024X003N	024X002N	024X020N	024X002N
Potential production (lb/acre):								
Favorable years		700	700	700	600	700	700	700
Normal years		450	450	450	450	450	450	450
Unfavorable years		300	300	300	300	300	300	300

652--Burrita-Hoot-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Burrita	Hoot	Rock outcrop	1	2
Thurber needlegrass	STTH2	20-50	---	---	20-50	20-50
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	5-10
Bottlebrush squirreltail	SIHY	---	5-15	---	---	---
Indian ricegrass	ORHY	---	5-15	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---
Needleandthread	STCO4	---	1-3	---	---	---
Balsamroot	BALSA	2-4	---	---	2-4	2-4
Tapertip hawksbeard	CRAC2	2-4	---	---	2-4	2-4
Other perennial forbs	PPFF	---	2-8	---	---	---
Wyoming big sagebrush	ARTRW	15-20	---	---	15-20	15-20
Downy rabbitbrush	CHVIP	2-5	---	---	2-5	2-5
Spiny hopsage	GRSP	2-5	2-5	---	2-5	2-5
Shadscale	ATCO	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	20-30	---	---	---
Winterfat	EULA5	---	2-5	---	---	---
Other shrubs	SSSS	2-10	---	---	2-10	2-10
Range site number		024X005N	024X002N	None	024X005N	024X005N
Potential production (lb/acre):						
Favorable years		800	700	---	800	800
Normal years		600	450	---	600	600
Unfavorable years		400	300	---	400	400

653--Burrita-Burnborough association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Burrita	Burnborough	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	20-30	5-10	40-60	---	---
Thurber needlegrass	STTH2	5-10	2-10	20-50	5-10	---	---
Bluegrass	POA++	2-10	---	---	2-10	---	---
Basin wildrye	ELCI2	2-5	2-15	---	2-5	---	50-60
Idaho fescue	FEID	---	20-40	---	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Tapertip hawksbeard	CRAC2	2-5	1-5	2-4	2-5	---	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	2-5	---	---
Balsamroot	BALSA	---	---	2-4	---	---	---
Lupine	LUPIN	---	---	---	---	---	2-5
Wyoming big sagebrush	ARTRW	5-10	---	15-20	5-10	---	---
Mountain big sagebrush	ARVA2	T-5	5-15	---	T-5	---	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	---
Spiny hopsage	GRSP	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	2-10	---	---	---
Range site number		024X028N	024X021N	024X005N	024X028N	None	025X003N
Potential production (lb/acre):							
Favorable years		1,000	1,400	800	1,000	---	2,500
Normal years		700	1,000	600	700	---	1,900
Unfavorable years		500	700	400	500	---	1,200

660--Oxcorel-Beoska-Whirlo assocation

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Oxcorel	Beoska	Whirlo	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	---	5-10	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	---	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	---	---	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---	---	---	---
Thurber needlegrass	STTH2	---	---	---	10-20	---	---	10-20
Basin wildrye	ELCI2	---	---	---	---	50-60	---	---
Western wheatgrass	AGSM	---	---	---	---	5-15	---	---
Other perennial grasses	PPGG	---	---	---	---	---	T-10	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2	---	---	1-2
Phlox	PHLOX	---	---	---	1-2	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	30-40	---	---	30-50	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	---	5-15	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	---	---	5-15
Winterfat	EULA5	2-5	2-5	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	30-35	---	---	30-35
Basin big sagebrush	ARTRT	---	---	---	---	15-20	---	---
Black greasewood	SAVE4	---	---	---	---	2-10	15-30	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---	---
Seepweed	SUAED	---	---	---	---	---	2-15	---
Range site number		024X002N	024X002N	024X002N	024X020N	024X006N	024X003N	024X020N
Potential production (lb/acre):								
Favorable years		700	700	700	700	1,500	600	700
Normal years		450	450	450	450	1,100	450	450
Unfavorable years		300	300	300	300	600	300	300

661--Oxcorel-Orovada association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Oxcorel	Orovada	1	2
Bottlebrush squirreltail	SIHY	5-15	2-10	---	5-15
Indian ricegrass	ORHY	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-10	---	2-5
Needleandthread	STCO4	1-3	---	---	1-3
Thurber needlegrass	STTH2	---	10-20	20-50	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---
Tapertip hawksbeard	CRAC2	---	1-2	2-4	---
Globemallow	SPHAE	---	1-2	---	---
Phlox	PHLOX	---	1-2	---	---
Balsamroot	BALSA	---	---	2-4	---
Other perennial forbs	PPFF	2-8	---	---	2-8
Shadscale	ATCO	30-40	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	20-30
Spiny hopsage	GRSP	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	---	---	2-5
Wyoming big sagebrush	ARTRW	---	30-35	15-20	---
Downy rabbitbrush	CHVIP	---	---	2-5	---
Other shrubs	SSSS	---	---	2-10	---
Range site number		O24XO02N	O24XO20N	O24XO05N	O24XO02N
Potential production (lb/acre):					
Favorable years		700	700	800	700
Normal years		450	450	600	450
Unfavorable years		300	300	400	300

662--Oxcorel-Whirlo-Trocken Variant association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Oxcorel	Whirlo	Trocken Variant	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	---	---
Indian ricegrass	ORHY	5-15	5-15	5-15	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-10	---	---
Needleandthread	STCO4	1-3	1-3	---	---	---
Thurber needlegrass	STTH2	---	---	10-20	20-50	20-50
Bluebunch wheatgrass	AGSP	---	---	---	5-10	5-10
Tapertip hawksbeard	CRAC2	---	---	1-2	2-4	2-4
Globemallow	SPHAE	---	---	1-2	---	---
Phlox	PHLOX	---	---	1-2	---	---
Balsamroot	BALSA	---	---	---	2-4	2-4
Other perennial forbs	PPFF	2-8	2-8	---	---	---
Shadscale	ATCO	30-40	30-40	---	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	2-5
Winterfat	EULA5	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW	---	---	30-35	15-20	15-20
Downy rabbitbrush	CHVIP	---	---	---	2-5	2-5
Other shrubs	SSSS	---	---	---	2-10	2-10
Range site number		024X002N	024X002N	024X020N	024X005N	024X005N
Potential production (lb/acre):						
Favorable years		700	700	700	800	800
Normal years		450	450	450	600	600
Unfavorable years		300	300	300	400	400

663--Oxcorel-Weso-Beoska association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Oxcorel	Weso	Beoska	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	---	5-15	---	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5	---	2-10
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---	---	---
Western wheatgrass	AGSM	---	---	---	5-15	---	---	---
Thurber needlegrass	STTH2	---	---	---	---	---	20-50	10-20
Bluebunch wheatgrass	AGSP	---	---	---	---	---	5-10	---
Balsamroot	BALSA	---	---	---	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	---	---	2-4	1-2
Globemallow	SPHAE	---	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8	---	---
Shadscale	ATCO	30-40	30-40	30-40	---	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	2-5	---	2-5	---	---
Basin big sagebrush	ARTRT	---	---	---	15-20	---	---	---
Black greasewood	SAVE4	---	---	---	2-10	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	15-20	30-35
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	---	---	2-10	---
Range site number		024X002N	024X002N	024X002N	024X006N	024X002N	024X005N	024X020N
Potential production (lb/acre):								
Favorable years		700	700	700	1,500	700	800	700
Normal years		450	450	450	1,100	450	600	450
Unfavorable years		300	300	300	600	300	400	300

664--Oxcorel-Golconda association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Oxcorel	Golconda	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	---	2-10
Indian ricegrass	ORHY	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-10
Needleandthread	STCO4	1-3	1-3	---	---
Basin wildrye	ELCI2	---	---	50-60	---
Western wheatgrass	AGSM	---	---	5-15	---
Thurber needlegrass	STTH2	---	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	---	1-2
Globemallow	SPHAE	---	---	---	1-2
Phlox	PHLOX	---	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	---	5-15
Winterfat	EULA5	2-5	2-5	---	---
Basin big sagebrush	ARTRT	---	---	15-20	---
Black greasewood	SAVE4	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---
Wyoming big sagebrush	ARTRW	---	---	---	30-35
Range site number		O24XO02N	O24XO02N	O24XO06N	O24XO20N
Potential production (lb/acre):					
Favorable years		700	700	1,500	700
Normal years		450	450	1,100	450
Unfavorable years		300	300	600	300

666--Oxcorel-Trocken Variant-Snapp association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Oxcorel	Trocken Variant	Snapp	1	2
Bottlebrush squirreltail	SIHY	5-15	2-10	---	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-10	---	2-10	2-5
Needleandthread	STCO4	1-3	---	---	---	1-3
Thurber needlegrass	STTH2	---	10-20	20-50	10-20	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---
Tapertip hawksbeard	CRAC2	---	1-2	2-4	1-2	---
Globemallow	SPHAE	---	1-2	---	1-2	---
Phlox	PHLOX	---	1-2	---	1-2	---
Balsamroot	BALSA	---	---	2-4	---	---
Other perennial forbs	PPFF	2-8	---	---	---	2-8
Shadscale	ATCO	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	5-15	2-5	5-15	2-5
Winterfat	EULA5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW	---	30-35	15-20	30-35	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---
Other shrubs	SSSS	---	---	2-10	---	---
Range site number		024X002N	024X020N	024X005N	024X020N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	800	700	700
Normal years		450	450	600	450	450
Unfavorable years		300	300	400	300	300

669--Oxcorel-Beoska association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Oxcorel	Beoska	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10	---	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10	---	2-10
Needleandthread	STCO4	1-3	1-3	---	---	---
Thurber needlegrass	STTH2	---	---	10-20	20-50	10-20
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---
Tapertip hawksbeard	CRAC2	---	---	1-2	2-4	1-2
Globemallow	SPHAE	---	---	1-2	---	1-2
Phlox	PHLOX	---	---	1-2	---	1-2
Balsamroot	BALSA	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	---	---	---
Shadscale	ATCO	30-40	30-40	---	---	---
Bud sagebrush	ARSP5	20-30	20-30	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	2-5	5-15
Winterfat	EULA5	2-5	2-5	---	---	---
Wyoming big sagebrush	ARTRW	---	---	30-35	15-20	30-35
Downy rabbitbrush	CHVIP	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	2-10	---
Range site number		O24XO02N	O24XO02N	O24XO20N	O24XO05N	O24XO20N
Potential production (lb/acre):						
Favorable years		700	700	700	800	700
Normal years		450	450	450	600	450
Unfavorable years		300	300	300	400	300

670--Misad-Snapp-Oxcorel association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Misad	Snapp	Oxcorel	1	2
Bottlebrush squirreltail	SIHY	5-15	---	5-15	2-10	2-10
Indian ricegrass	ORHY	5-15	---	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	2-10	2-10
Needleandthread	STCO4	1-3	---	1-3	---	---
Thurber needlegrass	STTH2	---	20-50	---	10-20	10-20
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	1-2	1-2
Globemallow	SPHAE	---	---	---	1-2	1-2
Phlox	PHLOX	---	---	---	1-2	1-2
Other perennial forbs	PPFF	2-8	---	2-8	---	---
Shadscale	ATCO	30-40	---	30-40	---	---
Bud sagebrush	ARSP5	20-30	---	20-30	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	5-15
Winterfat	EULA5	2-5	---	2-5	---	---
Wyoming big sagebrush	ARTRW	---	15-20	---	30-35	30-35
Downy rabbitbrush	CHVIP	---	2-5	---	---	---
Other shrubs	SSSS	---	2-10	---	---	---
Range site number		024X002N	024X005N	024X002N	024X020N	024X020N
Potential production (lb/acre):						
Favorable years		700	800	700	700	700
Normal years		450	600	450	450	450
Unfavorable years		300	400	300	300	300

673--Misad-Golconda-Tenabo association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Misad	Golconda	Tenabo	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	2-10	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	2-10	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	10-20	---
Tapertip hawksbeard	CRAC2	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW	---	---	---	30-35	---
Range site number		024X002N	024X002N	024X002N	024X020N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	700	700
Normal years		450	450	450	450	450
Unfavorable years		300	300	300	300	300

675--Misad-Orovada-Snapp association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Misad	Orovada	Snapp	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	2-10	---	2-10	5-15	5-10	2-5
Indian ricegrass	ORHY	5-15	5-15	---	5-15	5-15	---	2-5
Sandberg bluegrass	POSE	2-5	2-10	---	2-10	2-5	---	---
Needleandthread	STCO4	1-3	---	---	---	1-3	---	---
Thurber needlegrass	STTH2	---	10-20	20-50	10-20	---	---	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	---	5-20
Other perennial grasses	PPGG	---	---	---	---	---	T-10	---
Tapertip hawksbeard	CRAC2	---	1-2	2-4	1-2	---	---	---
Globemallow	SPHAE	---	1-2	---	---	---	---	---
Thelypody	THELY	---	---	---	---	---	---	2-4
Other perennial forbs	PPFF	2-8	---	---	---	2-8	2-8	---
Shadscale	ATCO	30-40	---	---	---	30-40	30-50	---
Bud sagebrush	ARSP5	20-30	---	---	---	20-30	5-15	---
Spiny hopsage	GRSP	2-5	5-15	2-5	5-15	2-5	---	5-15
Winterfat	EULA5	2-5	---	---	---	2-5	---	---
Wyoming big sagebrush	ARTRW	---	30-35	15-20	30-35	---	---	5-10
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	---	---
Black greasewood	SAVE4	---	---	---	---	---	15-30	20-30
Seepweed	SUAED	---	---	---	---	---	2-15	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	2-10	---	---	---	---
Range site number		024X002N	024X020N	024X005N	024X020N	024X002N	024X003N	024X022N
Potential production (lb/acre):								
Favorable years		700	700	800	700	700	600	800
Normal years		450	450	600	450	450	450	600
Unfavorable years		300	300	400	300	300	300	350

676--Misad Variant-Dun Glen-Misad Variant, strongly sloping, association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Misad Variant	Dun Glen	Misad Variant, strongly sloping	1	2
Indian ricegrass	ORHY	5-15	10-20	5-15	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	2-10	5-15	2-10
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	2-10
Needleandthread	STCO4	---	---	---	1-3	---
Thurber needlegrass	STTH2	---	---	---	---	10-20
Globemallow	SPHAE	1-4	---	1-4	---	1-2
Phlox	PHLOX	1-4	---	1-4	---	1-2
Tapertip hawksbeard	CRAC2	---	---	---	---	1-2
Other perennial forbs	PPFF	---	2-8	---	2-8	---
Winterfat	EULA5	20-40	60-70	20-40	2-5	---
Bud sagebrush	ARSP5	20-30	2-5	20-30	20-30	---
Shadscale	ATCO	2-5	---	2-5	30-40	---
Spiny hopsage	GRSP	---	---	---	2-5	5-15
Wyoming big sagebrush	ARTRW	---	---	---	---	30-35
Range site number		024X014N	024X004N	024X014N	024X002N	024X020N
Potential production (lb/acre):						
Favorable years		400	500	400	700	700
Normal years		300	350	300	450	450
Unfavorable years		200	200	200	300	300

680--Bojo-Trunk-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Bojo	Trunk	Rock outcrop	1	2	3	4
Bottlebrush squirreltail	SIHY	2-10	---	---	---	2-10	5-15	---
Indian ricegrass	ORHY	2-10	---	---	---	2-10	5-15	---
Webber ricegrass	STWE	2-10	---	---	---	2-10	---	---
Thurber needlegrass	STTH2	2-5	20-50	---	20-50	2-5	---	20-50
Desert needlegrass	STSP3	2-5	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	2-5	---	---	---	2-5	2-5	---
Pine bluegrass	POSC	2-5	---	---	---	2-5	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	5-10	---	---	5-10
Needleandthread	STCO4	---		---	---	---	1-3	---
Eriogonum	ERIOG	1-2	---	---	---	1-2	---	---
Hawksbeard	CREPI	1-2	---	---	---	1-2	---	---
Balsamroot	BALSA	---	2-4	---	2-4	---	---	2-4
Tapertip hawksbeard	CRAC2	---	2-4	---	2-4	---	---	2-4
Other perennial forbs	PPFF	---	---	---	---	---	2-8	---
Wyoming big sagebrush	ARTRW	10-25	15-20	---	15-20	10-25	---	15-20
Shadscale	ATCO	10-25	---	---	---	10-25	30-40	---
Spiny hopsage	GRSP	5-15	2-5	---	2-5	5-15	2-5	2-5
Bud sagebrush	ARSP5	2-5	---	---	---	2-5	20-30	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	2-5	2-5	---	2-5
Winterfat	EULA5	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	---	2-10	---	---	2-10
Range site number		024X026N	024X005N	None	024X005N	024X026N	024X002N	024X005N
Potential production (lb/acre):								
Favorable years		400	800	---	800	400	700	800
Normal years		300	600	---	600	300	450	600
Unfavorable years		200	400	---	400	200	300	400

683--Bojo, steep-Hoot-Bojo association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Bojo, steep	Hoot	Bojo	1	2
Bottlebrush squirreltail	SIHY	2-10	5-15	2-10	---	---
Indian ricegrass	ORHY	2-10	5-15	2-10	---	---
Webber ricegrass	STWE	2-10	---	2-10	---	---
Thurber needlegrass	STTH2	2-5	---	2-5	---	---
Desert needlegrass	STSP3	2-5	---	2-5	---	---
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	---
Pine bluegrass	POSC	2-5	---	2-5	---	---
Needleandthread	STCO4	---	1-3	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Eriogonum	ERIOG	1-2	---	1-2	---	---
Hawksbeard	CREPI	1-2	---	1-2	---	---
Lupine	LUPIN	---	---	---	---	2-5
Other perennial forbs	PPFF	---	2-8	---	---	---
Wyoming big sagebrush	ARTRW	10-25	---	10-25	---	---
Shadscale	ATCO	10-25	30-40	10-25	---	---
Spiny hopsage	GRSP	5-15	2-5	5-15	---	---
Bud sagebrush	ARSP5	2-5	20-30	2-5	---	---
Downy rabbitbrush	CHVIP	2-5	---	2-5	---	---
Winterfat	EULA5	---	2-5	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---
Range site number		024X026N	024X002N	024X026N	None	025X003N
Potential production (lb/acre):						
Favorable years		400	700	400	---	2,500
Normal years		300	450	300	---	1,900
Unfavorable years		200	300	200	---	1,200

691--Chilper-Trocken-Jerval association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil Name			Inclusion number--	
		Chilper	Trocken	Jerval	1	2
Bluegrass	POA++	10-30	10-30	10-30	10-30	---
Bottlebrush squirreltail	SIHY	---	---	---	2-10	---
Inland saltgrass	DISPS2	---	---	---	---	5-10
Other perennial grasses	PPGG	5-15	5-15	5-15	---	5-15
Perennial forbs	PPFF	2-5	2-5	2-5	5-10	3-7
Shadscale	ATCO	20-30	20-30	20-30	10-20	2-10
Bud sagebrush	ARSP5	10-20	10-20	10-20	5-10	---
Bailey greasewood	SAVEB	---	---	---	5-10	---
Black greasewood	SAVE4	---	---	---	---	40-60
Seepweed	SUAED	---	---	---	---	2-5
Other shrubs	SSSS	5-10	5-10	5-10	5-15	5-15
Range site number		027X028N	027X028N	027X028N	027X030N	027X025N
Potential production (lb/acre):						
Favorable years		700	700	700	400	400
Normal years		500	500	500	300	200
Unfavorable years		300	300	300	200	50

701--Atlow-Wiskan association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Atlow	Wiskan	1	2	3	4
Indian ricegrass	ORHY	10-15	2-10	X	---	---	---
Thurber needlegrass	STTH2	10-15	5-15	---	---	15-25	---
Bluegrass	POA++	2-10	2-10	X	---	---	---
Bluebunch wheatgrass	AGSP	---	10-20	---	2-10	20-30	---
Desert needlegrass	STSP3	---	---	X	---	---	---
Bottlebrush squirreltail	SIHY	---	---	X	---	---	---
Idaho fescue	FEID	---	---	---	30-60	---	---
Cusick bluegrass	POCU3	---	---	---	5-10	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-10	5-15
Basin wildrye	ELCI2	---	---	---	---	---	0-60
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	5-20	---	X	---	10-15	---
Globemallow	SPHAE	2-5	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	---	2-5	2-5	---
Arrowleaf balsamroot	BASA3	---	---	---	---	2-5	---
Lupine	LUPIN	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	5-15	X	---	---	---
Black sagebrush	ARARN	25-35	15-30	X	10-20	---	---
Ephedra	EPHED	---	---	X	---	---	---
Wyoming big sagebrush	ARTRW	---	---	X	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	5-10	10-15
Mountain big sagebrush	ARVA2	---	---	---	---	2-5	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	5-35	---	---	---	---	---
Utah juniper	JUOS	---	---	X	---	---	---
Range site number		024X030N	024X031N	027X075N	024X042N	025X014N	025X003N
Potential production (lb/acre):							
Favorable years		500	700	500	1,000	1,000	2,500
Normal years		350	500	400	800	800	1,900
Unfavorable years		250	300	300	500	600	1,200

703--Atlow, steep-Daick-Atlow association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Atlow, steep	Daick	Atlow	1	2	3	4
Indian ricegrass	ORHY	10-15	5-20	10-15	---	10-15	---	X
Thurber needlegrass	STTH2	10-15	---	10-15	---	10-15	20-50	---
Bluegrass	POA++	2-10	---	2-10	---	2-10	---	X
Desert needlegrass	STSP3	---	2-10	---	---	---	---	X
Basin wildrye	ELCI2	---	---	---	50-60	---	---	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---	---
Mat muhly	MURI	---	---	---	2-10	---	---	---
Sedge	CAREX	---	---	---	1-5	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	---	---	---	---	X
Other perennial grasses	PPGG	5-20	2-5	5-20	---	5-20	---	X
Globemallow	SPHAE	2-5	---	2-5	---	2-5	---	---
Balsamroot	BALSA	---	---	---	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	---	---	2-4	---
Other perennial forbs	PPFF	---	5-10	---	---	---	---	X
Black sagebrush	ARARN	25-35	---	25-35	---	25-35	---	X
Shadscale	ATCO	---	10-20	---	---	---	---	---
Bailey greasewood	SAVEB	---	5-15	---	---	---	---	---
Bud sagebrush	ARSP5	---	2-10	---	---	---	---	---
Nevada ephedra	EPNE	---	2-5	---	---	---	---	---
Basin big sagebrush	ARTRT	---	---	---	10-15	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	15-20	5
Downy rabbitbrush	CHVIP	---	---	---	---	---	2-5	---
Spiny hopsage	GRSP	---	---	---	---	---	2-5	---
Ephedra	EPHED	---	---	---	---	---	---	X
Other shrubs	SSSS	5-35	5-10	5-35	---	5-35	2-10	X
Utah juniper	JUOS	---	---	---	---	---	---	---
Range site number		O24XO30N	O27XO27N	O24XO30N	O25XO03N	O24XO30N	O24XO05N	O27XO75N
Potential production (lb/acre):								
Favorable years		500	200	500	2,500	500	800	500
Normal years		350	100	350	1,900	350	600	400
Unfavorable years		250	50	250	1,200	250	400	300

704--Atlow, steep-Hoot-Atlow association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Atlow, steep	Hoot	Atlow	1	2	3
Indian ricegrass	ORHY	10-15	5-15	10-15	2-10	---	5-15
Thurber needlegrass	STTH2	10-15	---	10-15	2-5	---	---
Bluegrass	POA++	2-10	---	2-10	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	---	2-10	---	5-15
Sandberg bluegrass	POSE	---	2-5	---	2-5	---	2-5
Needleandthread	STCO4	---	1-3	---	---	---	1-3
Webber ricegrass	STWE	---	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Other perennial grasses	PPGG	5-20	---	5-20	---	---	---
Globemallow	SPHAE	2-5	---	2-5	---	---	---
Eriogonum	ERIOG	---	---	---	1-2	---	---
Hawksbeard	CREPI	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	2-8	---	---	---	2-8
Black sagebrush	ARARN	25-35	---	25-35	---	---	---
Shadscale	ATCO	---	30-40	---	10-25	---	30-40
Bud sagebrush	ARSP5	---	20-30	---	2-5	---	20-30
Spiny hopsage	GRSP	---	2-5	---	5-15	---	2-5
Winterfat	EULA5	---	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW	---	---	---	10-25	---	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	---
Other shrubs	SSSS	5-35	---	5-35	---	---	---
Range site number		O24XO30N	O24XOO2N	O24XO30N	O24XO26N	None	O24XOO2N
Potential production (lb/acre):							
Favorable years		500	700	500	400	---	700
Normal years		350	450	350	300	---	450
Unfavorable years		250	300	250	200	---	300

750--Snapp-Oxcorel association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Snapp	Oxcorel	1	2
Thurber needlegrass	STTH2	20-50	---	10-20	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10	---
Indian ricegrass	ORHY	---	5-15	5-15	---
Sandberg bluegrass	POSE	---	2-5	2-10	---
Needleandthread	STCO4	---	1-3	---	---
Basin wildrye	ELCI2	---	---	---	50-60
Western wheatgrass	AGSM	---	---	---	5-15
Balsamroot	BALSA	2-4	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	1-2	---
Globemallow	SPHAE	---	---	1-2	---
Phlox	PHLOX	---	---	1-2	---
Other perennial forbs	PPFF	---	2-8	---	2-8
Wyoming big sagebrush	ARTRW	15-20	---	30-35	---
Downy rabbitbrush	CHVIP	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	---
Shadscale	ATCO	---	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	---	---
Winterfat	EULA5	---	2-5	---	---
Basin big sagebrush	ARTRT	---	---	---	15-20
Black greasewood	SAVE4	---	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Other shrubs	SSSS	2-10	---	---	---
Range site number		024X005N	024X002N	024X020N	024X006N
Potential production (lb/acre):					
Favorable years		800	700	700	1,500
Normal years		600	450	450	1,100
Unfavorable years		400	300	300	600

751--Snapp-Sodhouse association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Snapp	Sodhouse	1
Thurber needlegrass	STTH2	20-50	---	10-20
Bluebunch wheatgrass	AGSP	5-10	---	---
Bottlebrush squirreltail	SIHY	---	5-15	2-10
Indian ricegrass	ORHY	---	5-15	5-15
Sandberg bluegrass	POSE	---	2-5	2-10
Needleandthread	STCO4	---	1-3	---
Balsamroot	BALSA	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	---	1-2
Globemallow	SPHAE	---	---	1-2
Phlox	PHLOX	---	---	1-2
Other perennial forbs	PPFF	---	2-8	---
Wyoming big sagebrush	ARTRW	15-20	---	30-35
Downy rabbitbrush	CHVIP	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15
Shadscale	ATCO	---	30-40	---
Bud sagebrush	ARSP5	---	20-30	---
Winterfat	EULA5	---	2-5	---
Other shrubs	SSSS	2-10	---	---
Range site number		024X005N	024X002N	024X020N
Potential production (lb/acre):				
Favorable years		800	700	700
Normal years		600	450	450
Unfavorable years		400	300	300

752--Snapp-Orovada association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name		Inclusion number--
		Snapp	Orovada	1
Thurber needlegrass	STTH2	20-50	10-20	---
Bluebunch wheatgrass	AGSP	5-10	---	---
Indian ricegrass	ORHY	---	5-15	---
Bottlebrush squirreltail	SIHY	---	2-10	---
Sandberg bluegrass	POSE	---	2-10	---
Basin wildrye	ELCI2	---	---	50-60
Western wheatgrass	AGSM	---	---	5-15
Balsamroot	BALSA	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	1-2	---
Globemallow	SPHAE	---	1-2	---
Phlox	Phlox	---	1-2	---
Other perennial forbs	PPFF	---	---	2-8
Wyoming big sagebrush	ARTRW	15-20	30-35	---
Downy rabbitbrush	CHVIP	2-5	---	---
Spiny hopsage	GRSP	2-5	5-15	---
Basin big sagebrush	ARTRT	---	---	15-20
Black greasewood	SAVE4	---	---	2-10
Rubber rabbitbrush	CHNA2	---	---	2-5
Other shrubs	SSSS	2-10	---	---
Range site number		024X005N	024X020N	024X006N
Potential production (lb/acre):				
Favorable years		800	700	1,500
Normal years		600	450	1,100
Unfavorable years		400	300	600

812--Boton-Playas association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Boton	Playas	1	2	3
Indian ricegrass	ORHY	5-10	---	---	5-10	---
Bottlebrush squirreltail	SIHY	5-10	---	---	5-10	---
Inland saltgrass	DISPS2	2-5	---	---	2-5	5-10
Bluegrass	POA++	---	---	10-30	---	---
Other perennial grasses	PPGG	---	---	5-15	---	5-15
Perennial forbs	PPFF	3-7	---	2-5	3-7	3-7
Shadscale	ATCO	20-40	---	20-30	20-40	2-10
Black greasewood	SAVE4	5-20	---	---	5-20	40-60
Seepweed	SUAED	5-15	---	---	5-15	2-5
Bailey greasewood	SAVEB	2-10	---	---	2-10	---
Bud sagebrush	ARSP5	2-10	---	10-20	2-10	---
Other shrubs	SSSS	---	---	5-10	---	5-15
Range site number		O27XO24N	None	O27XO28N	O27XO24N	O27XO25N
Potential production (lb/acre):						
Favorable years		600	---	700	600	400
Normal years		400	---	500	400	200
Unfavorable years		200	---	300	200	50

813--Batan-Wendane-Valmy association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Batan	Wendane	Valmy	1	2	3
Bottlebrush squirreltail	SIHY	5-10	---	2-5	---	---	5-10
Basin wildrye	ELCI2	---	20-40	5-20	5-15	50-60	---
Indian ricegrass	DISPS2	---	---	2-5	---	---	---
Inland saltgrass	DIST	---	---	---	5-10	---	---
Western wheatgrass	AGSM	---	---	---	---	5-15	---
Other perennial grasses	PPGG	T-10	---	---	---	---	T-10
Thelypody	THELY	---	---	2-4	---	---	---
Other perennial forbs	PPFF	2-8	2-8	---	T-5	2-8	2-8
Shadscale	ATCO	30-50	---	---	---	---	30-50
Black greasewood	SAVE4	15-30	5-15	20-30	60-75	2-10	15-30
Bud sagebrush	ARSP5	5-15	---	---	---	---	5-15
Seepweed	SUAED	2-15	---	---	---	---	2-15
Torrey quailbush	ATTO	---	30-50	---	---	---	---
Basin big sagebrush	ARTRT	---	2-10	5-15	---	15-20	---
Wyoming big sagebrush	ARTRW	---	---	5-10	---	---	---
Spiny hopsage	GRSP	---	---	5-15	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Range site number		024X003N	024X015N	024X022N	024X011N	024X006N	024X003N
Potential production (lb/acre):							
Favorable years		600	1,500	800	500	1,500	600
Normal years		450	1,200	600	350	1,100	450
Unfavorable years		300	800	350	200	600	300

814--Batan silt loam, moderately saline-sodic

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Batan	1	2
Bottlebrush squirreltail	SIHY	5-10	---	5-10
Basin wildrye	ELCI2	---	50-60	---
Western wheatgrass	AGSM	---	5-15	---
Other perennial grasses	PPGG	T-10	---	T-10
Perennial forbs	PPFF	2-8	2-8	2-8
Shadscale	ATCO	30-50	---	30-50
Black greasewood	SAVE4	15-30	2-10	15-30
Bud sagebrush	ARSP5	5-15	---	5-15
Seepweed	SUAED	2-15	---	2-15
Basin big sagebrush	ARTRT	---	15-20	---
Rubber rabbitbrush	CHNA2	---	2-5	---
Range site number		024X003N	024X006N	024X003N
Potential production (lb/acre):				
Favorable years		600	1,500	600
Normal years		450	1,100	450
Unfavorable years		300	600	300

823--Trocken-Bluewing association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Trocken	Bluewing	1	2	3
Bluegrass	POA++	10-30	---	10-30	10-30	10-30
Indian ricegrass	ORHY	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	2-10	2-10	2-10	2-10
Other perennial grasses	PPGG	5-15	---	---	---	---
Perennial forbs	PPFF	2-5	2-5	5-10	5-10	5-10
Shadscale	ATCO	20-30	---	10-20	10-20	10-20
Bud sagebrush	ARSP5	10-20	---	5-10	5-10	5-10
Littleleaf horsebrush	TEGL	---	5-25	---	---	---
Rubber rabbitbrush	CHNA2	---	5-20	---	---	---
Bailey greasewood	SAVEB	---	5-20	5-10	5-10	5-10
Spiny hopsage	GRSP	---	5-20	---	---	---
Burrobrush	HYMEN3	---	5-10	---	---	---
Fourwing saltbush	ATCA2	---	5-10	---	---	---
Other shrubs	SSSS	5-10	---	5-15	5-15	5-15
Range site number		027X028N	027X022N	027X030N	027X030N	027X030N
Potential production (lb/acre):						
Favorable years		700	400	400	400	400
Normal years		500	200	300	300	300
Unfavorable years		300	50	200	200	200

825--Trocken very gravelly very fine sandy loam, moderately saline-sodic, 2 to 4 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Trocken	1	2
Indian ricegrass	ORHY	5-10	---	5-10
Bottlebrush squirreltail	SIHY	5-10	5-10	2-10
Inland saltgrass	DISPS2	2-5	---	---
Basin wildrye	ELCI2	---	15-25	---
Alkali sacaton	SPAI	---	5-10	---
Perennial forbs	PPFF	3-7	5-10	2-5
Shadscale	ATCO	20-40	2-5	---
Black greasewood	SAVE4	5-20	5-15	---
Seepweed	SUAED	5-15	---	---
Bailey greasewood	SAVEB	2-10	---	5-20
Bud sagebrush	ARSP5	2-10	---	---
Torrey quailbush	ATTO	---	50-60	---
Fourwing saltbush	ATCA2	---	2-5	5-10
Littleleaf horsebrush	TEGL	---	---	5-25
Rubber rabbitbrush	CHNA2	---	---	5-20
Spiny hopsage	GRSP	---	---	5-20
Burrobrush	HYMEN3	---	---	5-10
Range site number		027X024N	027X041N	027X022N
Potential production (lb/acre):				
Favorable years		600	1,500	400
Normal years		400	1,000	200
Unfavorable years		200	600	50

826--Trocken-Ragtown association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Trocken	Ragtown	1	2	3
Indian ricegrass	ORHY	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	---	---
Inland saltgrass	DISPS2	2-5	5-10	5-10	5-10	---
Other perennial grasses	PPGG	---	5-15	5-15	5-15	---
Perennial forbs	PPFF	3-7	3-7	3-7	3-7	---
Shadscale	ATCO	20-40	2-10	2-10	2-10	---
Black greasewood	SAVE4	5-20	40-60	40-60	40-60	---
Seepweed	SUAED	5-15	2-5	2-5	2-5	---
Bailey greasewood	SAVEB	2-10	---	---	---	---
Bud sagebrush	ARSP5	2-10	---	---	---	---
Other shrubs	SSSS	---	5-15	5-15	5-15	---
Range site number		027X024N	027X025N	027X025N	027X025N	None
Potential production (lb/acre):						
Favorable years		600	400	400	400	---
Normal years		400	200	200	200	---
Unfavorable years		200	50	50	50	---

827--Trocken gravelly very fine sandy loam, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Trocken	1	2
Bluegrass	POA++	10-30	10-30	---
Bottlebrush squirreltail	SIHY	---	2-10	---
Inland saltgrass	DISPS2	---	---	5-10
Other perennial grasses	PPGG	5-15	---	5-15
Perennial forbs	PPFF	2-5	5-10	3-7
Shadscale	ATCO	20-30	10-20	2-10
Bud sagebrush	ARSP5	10-20	5-10	---
Bailey greasewood	SAVEB	---	5-10	---
Black greasewood	SAVE4	---	---	40-60
Seepweed	SUAED	---	---	2-5
Other shrubs	SSSS	5-10	5-15	5-15
Range site number		027X028N	027X030N	027X025N
Potential production (lb/acre):				
Favorable years		700	400	400
Normal years		500	300	200
Unfavorable years		300	200	50

831--Benin-Yobe-Wendane association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name			Inclusion number--
		Benin	Yobe	Wendane	1
Bottlebrush squirreltail	SIHY	5-10	---	5-10	---
Inland saltgrass	DISPS2	---	5-10	---	---
Basin wildrye	ELCI2	---	---	15-25	---
Alkali sacaton	SPAI	---	---	5-10	---
Bluegrass	POA++	---	---	---	10-30
Other perennial grasses	PPGG	T-10	5-15	---	5-15
Perennial forbs	PPFF	2-8	3-7	5-10	2-5
Shadscale	ATCO	30-50	2-10	2-5	20-30
Black greasewood	SAVE4	15-30	40-60	5-15	---
Bud sagebrush	ARSP5	5-15	---	---	10-20
Seepweed	SUAED	2-15	2-5	---	---
Torrey quailbush	ATTO	---	---	50-60	---
Fourwing saltbush	ATCA2	---	---	2-5	---
Other shrubs	SSSS	---	5-15	---	5-10
Range site number		024X003N	027X025N	027X041N	027X028N
Potential production (lb/acre):					
Favorable years		600	400	1,500	700
Normal years		450	200	1,000	500
Unfavorable years		300	50	600	300

900--Roca-Wiskan-Reluctan association

(The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Roca	Wiskan	Reluctan	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	10-20	20-30	X	20-30	---	---
Thurber needlegrass	STTH2	5-10	5-15	2-10	X	15-25	---	---
Bluegrass	POA++	2-10	2-10	---	X	---	---	---
Basin wildrye	ELCI2	2-5	---	2-15	---	---	---	---
Indian ricegrass	ORHY	---	2-10	---	X	---	---	---
Idaho fescue	FEID	---	---	20-40	---	---	---	10-20
Bottlebrush squirreltail	SIHY	---	---	---	X	---	---	5-10
Nevada bluegrass	PONE3	---	---	---	---	2-10	---	---
Webber ricegrass	STWE	---	---	---	---	---	---	5-10
Cusick bluegrass	POCU3	---	---	---	---	---	---	2-5
Sandberg bluegrass	POSE	---	---	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	X	10-15	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	1-5	---	2-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	1-5	---	2-5	---	---
Goldenweed	HAPLO2	---	---	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	5-15	---	X	---	---	---
Wyoming big sagebrush	ARTRW	5-10	---	---	X	---	---	---
Mountain big sagebrush	ARVA2	T-5	---	5-15	---	2-5	---	1-5
Black sagebrush	ARARN	---	15-30	---	---	---	---	5-15
Ephedra	EPHED	---	---	---	X	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	5-10	---	---
Low sagebrush	ARAR8	---	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	---	X	---	---	---
Utah juniper	JUOS	---	---	---	X	---	---	---
Range site number		024X028N	024X031N	024X021N	024X052N	025X014N	None	024X016N
Potential production (lb/acre):								
Favorable years		1,000	700	1,400	500	1,000	---	350
Normal years		700	500	1,000	350	800	---	250
Unfavorable years		500	300	700	200	600	---	150

901--Roca-Reluctan association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Roca	Reluctan	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	20-30	---	---	20-30	15-30
Thurber needlegrass	STTH2	5-10	2-10	---	---	15-25	2-10
Bluegrass	POA++	2-10	---	---	---	---	---
Basin wildrye	ELCI2	2-5	2-15	---	---	---	---
Idaho fescue	FEID	---	20-40	10-20	---	---	25-50
Webber ricegrass	STWE	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	2-10	---
Spike fescue	LEKI2	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	10-15	---
Tapertip hawksbeard	CRAC2	2-5	1-5	---	---	2-5	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	2-5	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---
Balsamroot	BALSA	---	---	---	---	---	2-5
Wyoming big sagebrush	ARTRW	5-10	---	---	---	---	---
Mountain big sagebrush	ARVA2	T-5	5-15	1-5	---	2-5	---
Low sagebrush	ARAR8	---	---	5-15	---	---	10-20
Black sagebrush	ARARN	---	---	5-15	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	5-10	---
Antelope bitterbrush	PUTR2	---	---	---	---	0-10	---
Douglas rabbitbrush	CHVI8	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	---
Range site number		024X028N	024X021N	024X016N	None	025X014N	024X027N
Potential production (lb/acre):							
Favorable years		1,000	1,400	350	---	1,000	1,200
Normal years		700	1,000	250	---	800	800
Unfavorable years		500	700	150	---	600	600

902--Roca-Reluctan-Sumya association

(The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Roca	Reluctan	Sumya	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	20-30	X	10-20	---	---	20-30
Thurber needlegrass	STTH2	5-10	2-10	X	5-15	---	---	15-25
Bluegrass	POA++	2-10	---	X	2-10	---	X	---
Basin wildrye	ELCI2	2-5	2-15	---	---	---	---	---
Idaho fescue	FEID	---	20-40	---	---	10-20	---	---
Indian ricegrass	ORHY	---	---	X	2-10	---	X	---
Bottlebrush squirreltail	SIHY	---	---	X	---	5-10	X	---
Webber ricegrass	STWE	---	---	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	---	2-5	---	---
Desert needlegrass	STSP3	---	---	---	---	---	X	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	X	---	---	X	10-15
Tapertip hawksbeard	CRAC2	2-5	1-5	---	2-5	---	---	2-5
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	---	---	2-5
Goldenweed	HAPLO2	---	---	---	---	2-5	---	---
Phlox	PHLOX	---	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	X	5-15	---	X	---
Wyoming big sagebrush	ARTRW	5-10	---	X	---	---	X	---
Mountain big sagebrush	ARVA2	T-5	5-15	---	---	1-5	---	2-5
Ephedra	EPHED	---	---	X	---	---	X	---
Black sagebrush	ARARN	---	---	---	15-30	5-15	X	---
Low sagebrush	ARAR8	---	---	---	---	5-15	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	5-10
Other shrubs	SSSS	---	---	X	---	---	X	---
Utah juniper	JUOS	---	---	X	X	X	X	---
Range site number		024X028N	024X021N	024X052N	024X031N	024X016N	027X075N	025X014N
Potential production (lb/acre):								
Favorable years		1,000	1,400	500	700	350	500	1,000
Normal years		700	1,000	350	500	250	400	800
Unfavorable years		500	700	200	300	150	300	600

903--Roca-Burnborough-Rock outcrop association

(The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Roca	Burnborough	Rock outcrop	1	2
Bluebunch wheatgrass	AGSP	40-60	20-30	---	X	15-30
Thurber needlegrass	STTH2	5-10	2-10	---	X	2-10
Bluegrass	POA++	2-10	---	---	X	---
Basin wildrye	ELCI2	2-5	2-15	---	---	---
Idaho fescue	FEID	---	20-40	---	---	25-50
Indian ricegrass	ORHY	---	---	---	X	---
Bottlebrush squirreltail	SIHY	---	---	---	X	---
Spike fescue	LEKI2	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	X	---
Tapertip hawksbeard	CRAC2	2-5	1-5	---	---	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	---
Balsamroot	BALSA	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	X	---
Wyoming big sagebrush	ARTRW	5-10	---	---	X	---
Mountain big sagebrush	ARVA2	T-5	5-15	---	---	---
Ephedra	EPHED	---	---	---	X	---
Low sagebrush	ARAR8	---	---	---	---	10-20
Douglas rabbitbrush	CHVI8	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	X	---
Range site number		024X028N	024X021N	None	024X052N	024X027N
Potential production (lb/acre):						
Favorable years		1,000	1,400	---	500	1,200
Normal years		700	1,000	---	350	800
Unfavorable years		500	700	---	200	600

905--Roca-Reluctan Variant association, steep

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Roca	Reluctan Variant	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	---	20-30	5-10	5-10	---
Thurber needlegrass	STTH2	5-10	---	15-25	20-50	20-50	---
Bluegrass	POA++	2-10	---	---	---	---	---
Basin wildrye	ELCI2	2-5	---	---	---	---	50-60
Idaho fescue	FEID	---	50-70	---	---	---	---
Cusick bluegrass	POCU3	---	2-10	---	---	---	---
Pine bluegrass	POSC	---	2-10	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---
Nevada bluegrass	PONE3	---	---	2-10	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	10-15	---	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	2-5	2-4	2-4	---
Arrowleaf balsamroot	BASA3	2-5	---	2-5	---	---	---
Balsamroot	BALSA	---	2-5	---	2-4	2-4	---
Wyoming big sagebrush	ARTRW	5-10	2-5	---	15-20	15-20	---
Mountain big sagebrush	ARVA2	T-5	2-5	2-5	---	---	---
Rubber rabbitbrush	CHNA2	---	T-2	---	---	---	2-5
Douglas rabbitbrush	CHVI8	---	T-2	---	---	---	---
Basin big sagebrush	ARTRT	---	---	5-10	---	---	10-15
Antelope bitterbrush	PUTR2	---	---	0-10	---	---	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	2-5	---
Spiny hopsage	GRSP	---	---	---	2-5	2-5	---
Other shrubs	SSSS	---	---	---	2-10	2-10	---

Range site number	024X028N	024X033N	025X014N	024X005N	024X005N	025X003N
Potential production (lb/acre):						
Favorable years	1,000	800	1,000	800	800	2,500
Normal years	700	600	800	600	600	1,900
Unfavorable years	500	400	600	400	400	1,200

906--Roca-Reluctan Variant association, very steep

(The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Roca	Reluctan Variant	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	---	20-30	40-60	X	---
Thurber needlegrass	STTH2	5-10	---	2-10	5-10	X	---
Bluegrass	POA++	2-10	---	---	2-10	X	---
Basin wildrye	ELCI2	2-5	---	2-15	2-5	---	50-60
Idaho fescue	FEID	---	50-70	20-40	---	---	---
Cusick bluegrass	POCU3	---	2-10	---	---	---	---
Pine bluegrass	POSC	---	2-10	---	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---	---
Indian ricegrass	ORHY	---	---	---	---	X	---
Bottlebrush squirreltail	SIHY	---	---	---	---	X	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	X	---
Tapertip hawksbeard	CRAC2	2-5	2-5	1-5	2-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	1-5	2-5	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---
Lupine	LUPIN	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	X	---
Wyoming big sagebrush	ARTRW	5-10	2-5	---	5-10	X	---
Mountain big sagebrush	ARVA2	T-5	2-5	5-15	T-5	---	---
Rubber rabbitbrush	CHNA2	---	T-2	---	---	---	2-5
Douglas rabbitbrush	CHVI8	---	T-2	---	---	---	---
Ephedra	EPHED	---	---	---	---	X	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Other shrubs	SSSS	---	---	---	---	X	---
Utah juniper	JUOS	---	---	---	---	X	---

Range site number	O24XO28N	O24XO33N	O24XO21N	O24XO28N	O24XO52N	O25XO03N
Potential production (lb/acre):						
Favorable years	1,000	800	1,400	1,000	500	2,500
Normal years	700	600	1,000	700	350	1,900
Unfavorable years	500	400	700	500	200	1,200

911--Tenabo-Daick-Oxcorel association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Tenabo	Daick	Oxcorel	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-20	5-15	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	2-5	2-10
Needleandthread	STCO4	1-3	---	1-3	1-3	1-3	---
Desert needlegrass	STSP3	---	2-10	---	---	---	---
Thurber needlegrass	STTH2	---	---	---	---	---	10-20
Other perennial grasses	PPGG	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	---	1-2
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	Phlox	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	5-10	2-8	2-8	2-8	---
Shadscale	ATCO	30-40	10-20	30-40	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	2-10	20-30	20-30	20-30	---
Spiny hopsage	GRSP	2-5	---	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	---	2-5	2-5	2-5	---
Bailey greasewood	SAVEB	---	5-15	---	---	---	---
Nevada ephedra	EPNE	---	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	30-35
Other shrubs	SSSS	---	5-10	---	---	---	---
Range site number		024X002N	027X027N	024X002N	024X002N	024X002N	024X020N
Potential production (lb/acre):							
Favorable years		700	200	700	700	700	700
Normal years		450	100	450	450	450	450
Unfavorable years		300	50	300	300	300	300

930--Bubus-Benin-Wendane association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Bubus	Benin	Wendane	1	2	3
Bottlebrush squirreltail	SIHY	5-10	5-10	---	5-15	5-10	---
Basin wildrye	ELCI2	---	---	20-40	---	---	2-5
Indian ricegrass	ORHY	---	---	---	5-15	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Needleandthread	STCO4	---	---	---	1-3	---	---
Alkali sacaton	SPAI	---	---	---	---	---	15-40
Alkali muhly	MUAS	---	---	---	---	---	10-20
Alkali bluegrass	POJU	---	---	---	---	---	5-15
Inland saltgrass	DISPS2	---	---	---	---	---	5-10
Alkali cordgrass	SPGR	---	---	---	---	---	5-10
Arrowgrass	TRIGL	---	---	---	---	---	1-3
Other perennial grasses	PPGG	T-10	T-10	---	---	T-10	---
Perennial forbs	PPFF	2-8	2-8	2-8	2-8	2-8	---
Shadscale	ATCO	30-50	30-50	---	30-40	30-50	---
Black greasewood	SAVE4	15-30	15-30	5-15	---	15-30	T-2
Bud sagebrush	ARSP5	5-15	5-15	---	20-30	5-15	---
Seepweed	SUAED	2-15	2-15	---	---	2-15	---
Torrey quailbush	ATTO	---	---	30-50	---	---	---
Basin big sagebrush	ARTRT	---	---	2-10	---	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---	---
Winterfat	EULA5	---	---	---	2-5	---	---
Silver buffaloberry	SHAR	---	---	---	---	---	T-2
Willow	SALIX	---	---	---	---	---	T-2
Rubber rabbitbrush	CHNA2	---	---	---	---	---	T-2
Woods rose	ROWO	---	---	---	---	---	T-2
Range site number		024X003N	024X003N	024X015N	024X002N	024X003N	024X009N
Potential production (lb/acre):							
Favorable years		600	600	1,500	700	600	1,500
Normal years		450	450	1,200	450	450	1,000
Unfavorable years		300	300	800	300	300	700

931--Bubus-Valmy association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Bubus	Valmy	1	2	3	4
Bottlebrush squirreltail	SIHY	5-10	2-5	5-15	5-10	---	2-10
Basin wildrye	ELCI2	---	5-20	---	---	20-40	---
Indian ricegrass	ORHY	---	2-5	5-15	---	---	10-20
Sandberg bluegrass	POSE	---	---	2-5	---	---	---
Needleandthread	STCO4	---	---	1-3	---	---	---
Other perennial grasses	PPGG	T-10	---	---	T-10	---	---
Thelypody	THELY	---	2-4	---	---	---	---
Perennial forbs	PPFF	2-8	---	2-8	2-8	2-8	2-8
Shadscale	ATCO	30-50	---	30-40	30-50	---	---
Black greasewood	SAVE4	15-30	20-30	---	15-30	5-15	---
Bud sagebrush	ARSP5	5-15	---	20-30	5-15	---	2-5
Seepweed	SUAED	2-15	---	---	2-15	---	---
Basin big sagebrush	ARTRT	---	5-15	---	---	2-10	---
Wyoming big sagebrush	ARTRW	---	5-10	---	---	---	---
Spiny hopsage	GRSP	---	5-15	2-5	---	---	---
Winterfat	EULA5	---	---	2-5	---	---	60-70
Torrey quailbush	ATTO	---	---	---	---	30-50	---
Range site number		024X003N	024X022N	024X002N	024X003N	024X015N	024X004N
Potential production (lb/acre):							
Favorable years		600	800	700	600	1,500	500
Normal years		450	600	450	450	1,200	350
Unfavorable years		300	350	300	300	800	200

932--Bubus very fine sandy loam, 0 to 2 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Bubus	1	2	3
Bottlebrush squirreltail	SIHY	5-10	2-5	2-10	---
Basin wildrye	ELCI2	---	5-20	15-20	---
Indian ricegrass	DISPS2	---	2-5	---	10-20
Inland saltgrass	DIST	---	---	2-10	---
Needleandthread	STCO4	---	---	---	5-10
Other perennial grasses	PPGG	T-10	---	---	2-5
Thelypody	THELY	---	2-4	---	---
Other perennial forbs	PPFF	2-8	---	2-8	2-5
Shadscale	ATCO	30-50	---	---	---
Black greasewood	SAVE4	15-30	20-30	40-60	10-40
Bud sagebrush	ARSP5	5-15	---	---	---
Seepweed	SUAED	2-15	---	---	---
Basin big sagebrush	ARTRT	---	5-15	---	---
Wyoming big sagebrush	ARTRW	---	5-10	---	---
Spiny hopsage	GRSP	---	5-15	---	---
Other shrubs	SSSS	---	---	---	5-20
Range site number		024X003N	024X022N	024X008N	027X016N
Potential production (lb/acre):					
Favorable years		600	800	800	300
Normal years		450	600	600	200
Unfavorable years		300	350	400	50

950--Puffer, very steep-Xine-Puffer association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Puffer, very steep	Xine	Puffer	1	2	3	4
Indian ricegrass	ORHY	10-15	---	10-15	5-15	---	X	---
Thurber needlegrass	STTH2	10-15	2-10	10-15	---	---	---	---
Bluegrass	POA++	2-10	---	2-10	---	---	X	---
Idaho fescue	FEID	---	20-40	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	20-30	---	---	---	---	---
Basin wildrye	ELCI2	---	2-15	---	---	---	---	50-60
Bottlebrush squirreltail	SIHY	---	---	---	5-15	---	X	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Needleandthread	STCO4	---	---	---	1-3	---	---	---
Desert needlegrass	STSP3	---	---	---	---	---	X	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	5-20	---	5-20	---	---	X	---
Globemallow	SPHAE	2-5	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	---	---	---	---	---
Arrowleaf balsamroot	BASA3	---	1-5	---	---	---	---	---
Lupine	LUPIN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	2-8	---	X	---
Black sagebrush	ARARN	25-35	---	25-35	---	---	X	---
Mountain big sagebrush	ARVA2	---	5-15	---	---	---	---	---
Shadscale	ATCO	---	---	---	30-40	---	---	---
Bud sagebrush	ARSP5	---	---	---	20-30	---	---	---
Spiny hopsage	GRSP	---	---	---	2-5	---	---	---
Winterfat	EULA5	---	---	---	2-5	---	---	---
Ephedra	EPHED	---	---	---	---	---	X	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	X	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	5-35	---	5-35	---	X	---	---
Utah juniper	JUOS	---	---	---	---	---	X	---
Range site number		024X030N	024X021N	024X030N	024X002N	None	027X075N	025X003N
Potential production (lb/acre):								
Favorable years		500	1,400	500	700	---	500	2,500
Normal years		350	1,000	350	450	---	400	1,900
Unfavorable years		250	700	250	300	---	300	1,200

953--Puffer-Bojo-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Puffer	Bojo	Rock outcrop	1	2
Indian ricegrass	ORHY	10-15	2-10	---	2-10	2-10
Thurber needlegrass	STTH2	10-15	2-5	---	2-5	2-5
Bluegrass	POA++	2-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-10	---	2-10	2-10
Webber ricegrass	STWE	---	2-10	---	2-10	2-10
Desert needlegrass	STSP3	---	2-5	---	2-5	2-5
Sandberg bluegrass	POSE	---	2-5	---	2-5	2-5
Pine bluegrass	POSC	---	2-5	---	2-5	2-5
Other perennial grasses	PPGG	5-20	---	---	---	---
Globemallow	SPHAE	2-5	---	---	---	---
Eriogonum	ERIOG	---	1-2	---	1-2	1-2
Hawksbeard	CREPI	---	1-2	---	1-2	1-2
Black sagebrush	ARARN	25-35	---	---	---	---
Wyoming big sagebrush	ARTRW	---	10-25	---	10-25	10-25
Shadscale	ATCO	---	10-25	---	10-25	10-25
Spiny hopsage	GRSP	---	5-15	---	5-15	5-15
Bud sagebrush	ARSP5	---	2-5	---	2-5	2-5
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	2-5
Other shrubs	SSSS	5-35	---	---	---	---
Range site number		024X030N	024X026N	None	024X026N	024X026N
Potential production (lb/acre):						
Favorable years		500	400	---	400	400
Normal years		350	300	---	300	300
Unfavorable years		250	200	---	200	200

954--Puffer-Xine-Rock outcrop association

(An X indicated that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Puffer	Xine	Rock outcrop	1	2
Indian ricegrass	ORHY	10-15	---	---	---	X
Thurber needlegrass	STTH2	10-15	2-10	---	---	---
Bluegrass	POA++	2-10	---	---	---	X
Idaho fescue	FEID	---	20-40	---	30-60	---
Bluebunch wheatgrass	AGSP	---	20-30	---	2-10	---
Basin wildrye	ELCI2	---	2-15	---	---	---
Cusick bluegrass	POCU3	---	---	---	5-10	---
Desert needlegrass	STSP3	---	---	---	---	X
Bottlebrush squirreltail	SIHY	---	---	---	---	X
Other perennial grasses	PPGG	5-20	---	---	---	X
Globemallow	SPHAE	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	---	2-5	---
Arrowleaf balsamroot	BASA3	---	1-5	---	---	---
Other perennial forbs	PPFF	---	---	---	---	X
Black sagebrush	ARARN	25-35	---	---	10-20	X
Mountain big sagebrush	ARVA2	---	5-15	---	---	---
Ephedra	EPHED	---	---	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	X
Other shrubs	SSSS	5-35	---	---	---	X
Utah juniper	JUOS	---	---	---	---	X
Range site number		024X030N	024X021N	None	024X042N	027X075N
Potential production (lb/acre):						
Favorable years		500	1,400	---	1,000	500
Normal years		350	1,000	---	800	400
Unfavorable years		250	700	---	500	300

955--Puffer-Mulhop-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Puffer	Mulhop	Rock outcrop	1	2	3
Indian ricegrass	ORHY	10-15	X	---	---	---	10-15
Thurber needlegrass	STTH2	10-15	---	---	---	2-10	10-15
Bluegrass	POA++	2-10	X	---	---	---	2-10
Desert needlegrass	STSP3	---	X	---	---	---	---
Bottlebrush squirreltail	SIHY	---	X	---	---	---	---
Basin wildrye	ELCI2	---	---	---	50-60	2-15	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Idaho fescue	FEID	---	---	---	---	20-40	---
Bluebunch wheatgrass	AGSP	---	---	---	---	20-30	---
Other perennial grasses	PPGG	5-20	X	---	---	---	5-20
Globemallow	SPHAE	2-5	---	---	---	---	2-5
Lupine	LUPIN	---	---	---	2-5	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-5	---
Arrowleaf balsamroot	BASA3	---	---	---	---	1-5	---
Other perennial forbs	PPFF	---	X	---	---	---	---
Black sagebrush	ARARN	25-35	X	---	---	---	25-35
Ephedra	EPHED	---	X	---	---	---	---
Wyoming big sagebrush	ARTRW	---	X	---	---	---	---
Basin big sagebrush	ARTRT	---	---	---	10-15	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---
Mountain big sagebrush	ARTRV	---	---	---	---	5-15	---
Other shrubs	SSSS	5-35	X		---	---	5-35
Utah juniper	JUOS	---	X	---	---	---	---
Range site number		O24XO30N	O27XO75N	None	O25XOO3N	O24XO21N	O24XO30N
Potential production (lb/acre):							
Favorable years		500	500	---	2,500	1,400	500
Normal years		350	400	---	1,900	1,000	350
Unfavorable years		250	300	---	1,200	700	250

956--Puffer-Linrose-Iver association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Puffer	Linrose	Iver	1	2	3	4
Indian ricegrass	ORHY	10-15	---	---	---	X	---	---
Thurber needlegrass	STTH2	10-15	---	---	2-10	---	2-5	---
Bluegrass	POA++	2-10	---	---	---	X	---	---
Idaho fescue	FEID	---	30-60	30-60	25-50	---	2-5	---
Cusick bluegrass	POCU3	---	5-10	5-10	---	---	---	---
Bluebunch wheatgrass	AGSP	---	2-10	5-10	15-30	---	20-50	---
Mountain brome	BRCA5	---	---	2-5	---	---	2-15	---
Sedge	CAREX	---	---	2-5	---	---	---	---
Spike fescue	LEKI2	---	---	---	2-10	---	---	---
Desert needlegrass	STSP3	---	---	---	---	X	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	X	2-5	---
Basin wildrye	ELCI2	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	5-20	---	---	---	X	---	---
Globemallow	SPHAE	2-5	---	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-5	1-3	---	---	2-5	---
Lupine	LUPIN	---	---	1-2	---	---	---	---
Balsamroot	BALSA	---	---	---	2-5	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	---	---	X	---	---
Black sagebrush	ARARN	25-35	10-20	---	---	X	---	---
Mountain big sagebrush	ARVA2	---	---	5-15	---	---	5-15	---
Snowberry	SYMPH	---	---	2-5	---	---	---	---
Low sagebrush	ARAR8	---	---	---	10-20	---	---	---
Douglas rabbitbrush	CHVI8	---	---	---	2-5	---	---	---
Ephedra	EPHED	---	---	---	---	X	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	X	---	---
Other shrubs	SSSS	5-35	---	---	---	X	---	---
Utah juniper	JUOS	---	---	---	---	X	---	---
Range site number		024X030N	024X042N	024X023N	024X027N	027X075N	024X029N	None
Potential production (lb/acre):								
Favorable years		500	1,000	1,500	1,200	500	1,500	---
Normal years		350	800	1,200	800	400	1,100	---
Unfavorable years		250	500	900	600	300	800	---

957--Puffer, very steep-Atlow-Puffer association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Puffer, very steep	Atlow	Puffer	1	2	3	4
Bluegrass	POA++	10-40	10-40	10-40	---	---	---	10-30
Thurber needlegrass	STTH2	2-10	2-10	2-10	---	---	---	---
Desert needlegrass	STSP3	---	---	---	5-10	---	---	---
Pine bluegrass	POSC	---	---	---	---	5-15	5-15	---
Indian ricegrass	ORHY	---	---	---	---	5-15	5-15	---
Bottlebrush squirreltail	SIHY	---	---	---	---	5-10	5-10	---
Other perennial grasses	PPGG	5-10	5-10	5-10	10-25	5-10	5-10	5-15
Perennial forbs	PPFF	5-10	5-10	5-10	2-5	5-10	5-10	2-5
Black sagebrush	ARARN	20-30	20-30	20-30	20-40	---	---	---
Shadscale	ATCO	5-10	5-10	5-10	---	---	---	20-30
Bailey greasewood	SAVEB	---	---	---	5-15	---	---	---
Nevada ephedra	EPNE	---	---	---	2-5	5-10	5-10	---
Wyoming big sagebrush	ARTRW	---	---	---	---	10-20	10-20	---
Spiny hopsage	GRSP	---	---	---	---	10-20	10-20	---
Bud sagebrush	ARSP5	---	---	---	---	---	---	10-20
Other shrubs	SSSS	5-10	5-10	5-10	5-15	---	---	5-10
Range site number		027X032N	027X032N	027X032N	027X061N	027X008N	027X008N	027X028N
Potential production (lb/acre):								
Favorable years		600	600	600	200	700	700	700
Normal years		400	400	400	100	500	500	500
Unfavorable years		200	200	200	50	300	300	300

960--Findout-Puffer-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name			Inclusion number--
		Findout	Puffer	Rock outcrop	1
Desert needlegrass	STSP3	20-30	---	---	20-30
Indian ricegrass	ORHY	5-10	10-15	---	5-10
Sandberg bluegrass	POSE	2-5	---	---	2-5
Bottlebrush squirreltail	SIHY	2-5	---	---	2-5
Thurber needlegrass	STTH2	---	10-15	---	---
Bluegrass	POA++	---	2-10	---	---
Other perennial grasses	PPGG	---	5-20	---	---
Globemallow	SPHAE	---	2-5	---	---
Other perennial forbs	PPFF	5-10	---	---	5-10
Littleleaf horsebrush	TEGL	10-20	---	---	10-20
Shadscale	ATCO	5-15	---	---	5-15
Black sagebrush	ARARN	---	25-35	---	---
Other shrubs	SSSS	5-15	5-35	---	5-15
Range site number		027X017N	024X030N	None	027X017N
Potential production (lb/acre):					
Favorable years		400	500	---	400
Normal years		200	350	---	200
Unfavorable years		100	250	---	100

980--Mazuma very fine sandy loam, 0 to 4 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Mazuma	1	2	3
Bluegrass	POA++	10-30	---	---	10-30
Basin wildrye	ELCI2	---	---	15-25	---
Alkali sacaton	SPAI	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---
Other perennial grasses	PPGG	5-15	---	---	5-15
Perennial forbs	PPFF	2-5	---	5-10	2-5
Shadscale	ATCO	20-30	---	2-5	20-30
Bud sagebrush	ARSP5	10-20	---	---	10-20
Torrey quailbush	ATTO	---	---	50-60	---
Black greasewood	SAVE4	---	---	5-15	---
Fourwing saltbush	ATCA2	---	---	2-5	---
Other shrubs	SSSS	5-10	---	---	5-10
Range site number		027X028N	None	027X041N	027X028N
Potential production (lb/acre):					
Favorable years		700	---	1,500	700
Normal years		500	---	1,000	500
Unfavorable years		300	---	600	300

981--Mazuma fine sandy loam, strongly saline-sodic, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Mazuma	1	2
Inland saltgrass	DISPS2	5-10	---	5-10
Bluegrass	POA++	---	10-30	---
Other perennial grasses	PPGG	5-15	5-15	5-15
Perennial forbs	PPFF	3-7	2-5	3-7
Black greasewood	SAVE4	40-60	---	40-60
Shadscale	ATCO	2-10	20-30	2-10
Seepweed	SUAED	2-5	---	2-5
Bud sagebrush	ARSP5	---	10-20	---
Other shrubs	SSSS	5-15	5-10	5-15
Range site number		027X025N	027X028N	027X025N
Potential production (lb/acre):				
Favorable years		400	700	400
Normal years		200	500	200
Unfavorable years		50	300	50

983--Mazuma-Swingler-Trocken association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Mazuma	Swingler	Trocken	1	2
Indian ricegrass	ORHY	5-10	5-10	---	5-10	30-50
Bottlebrush squirreltail	SIHY	5-10	5-10	---	2-10	---
Inland saltgrass	DISPS2	2-5	2-5	---	---	---
Bluegrass	POA++	---	---	10-30	---	---
Needleandthread	STCO4	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	5-15	---	2-10
Perennial forbs	PPFF	3-7	3-7	2-5	2-5	2-5
Shadscale	ATCO	20-40	20-40	20-30	---	---
Black greasewood	SAVE4	5-20	5-20	---	---	---
Seepweed	SUAED	5-15	5-15	---	---	---
Bailey greasewood	SAVEB	2-10	2-10	---	5-20	---
Bud sagebrush	ARSP5	2-10	2-10	10-20	---	---
Littleleaf horsebrush	TEGL	---	---	---	5-25	---
Rubber rabbitbrush	CHNA2	---	---	---	5-20	---
Spiny hopsage	GRSP	---	---	---	5-20	---
Burrobrush	HYMEN3	---	---	---	5-10	---
Fourwing saltbush	ATCA2	---	---	---	5-10	5-15
Winterfat	EULA5	---	---	---	---	2-10
Nevada dalea	PSPO	---	---	---	---	2-10
Other shrubs	SSSS	---	---	5-10	---	5-10
Range site number		027X024N	027X024N	027X028N	027X022N	027X009N
Potential production (lb/acre):						
Favorable years		600	600	700	400	800
Normal years		400	400	500	200	450
Unfavorable years		200	200	300	50	200

984--Mazuma-Bluewing-Woolsey association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Mazuma	Bluewing	Woolsey	1	2	3	4
Inland saltgrass	DISPS2	5-10	---	---	---	5-10	---	---
Indian ricegrass	ORHY	---	10-20	10-20	40-50	---	10-20	---
Bottlebrush squirreltail	SIHY	---	5-10	5-10	---	---	5-10	---
Needleandthread	STCO4	---	---	---	10-20	---	---	---
Basin wildrye	ELCI2	---	---	---	2-5	---	---	---
Sand dropseed	SPCR	---	---	---	1-2	---	---	---
Other perennial grasses	PPGG	5-15	---	---	---	5-15	---	---
Perennial forbs	PPFF	3-7	3-7	3-7	5-10	3-7	3-7	---
Black greasewood	SAVE4	40-60	---	---	10-15	40-60	---	---
Shadscale	ATCO	2-10	15-30	15-30	---	2-10	15-30	---
Seepweed	SUAED	2-5	---	---	---	2-5	---	---
Bailey greasewood	SAVEB	---	5-30	5-30	---	---	5-30	---
Bud sagebrush	ARSP5	---	5-15	5-15	---	---	5-15	---
Winterfat	EULA5	---	---	---	5-10	---	---	---
Nevada dalea	PSPO	---	---	---	2-5	---	---	---
Other shrubs	SSSS	5-15	---	---	---	5-15	---	---
Range site number		027X025N	027X018N	027X018N	027X012N	027X025N	027X018N	None
Potential production (lb/acre):								
Favorable years		400	500	500	500	400	500	---
Normal years		200	300	300	400	200	300	---
Unfavorable years		50	100	100	300	50	100	---

985--Mazuma-Toulon-Chumall association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Mazuma	Toulon	Chumall	1	2
Indian ricegrass	ORHY	5-10	---	5-10	10-20	---
Bottlebrush squirreltail	SIHY	5-10	2-10	5-10	---	---
Inland saltgrass	DISPS2	2-5	---	2-5	---	5-10
Bluegrass	POA++	---	10-30	---	---	---
Needleandthread	STCO4	---	---	---	5-10	---
Other perennial grasses	PPGG	---	---	---	2-5	5-15
Perennial forbs	PPFF	3-7	5-10	3-7	2-5	3-7
Shadscale	ATCO	20-40	10-20	20-40	---	2-10
Black greasewood	SAVE4	5-20	---	5-20	10-40	40-60
Seepweed	SUAED	5-15	---	5-15	---	2-5
Bailey greasewood	SAVEB	2-10	5-10	2-10	---	---
Bud sagebrush	ARSP5	2-10	5-10	2-10	---	---
Other shrubs	SSSS	---	5-15	---	5-20	5-15
Range site number		O27XO24N	O27XO3ON	O27XO24N	O27XO16N	O27XO25N
Potential production (lb/acre):						
Favorable years		600	400	600	300	400
Normal years		400	300	400	200	200
Unfavorable years		200	200	200	50	50

986--Mazuma-Trocken association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Mazuma	Trocken	1	2	3	4
Bluegrass	POA++	10-30	10-30	10-30	10-30	---	---
Bottlebrush squirreltail	SIHY	---	---	2-10	2-10	5-10	---
Indian ricegrass	ORHY	---	---	---	---	10-30	20-40
Alkali sacaton	SPAI	---	---	---	---	T-5	---
Other perennial grasses	PPGG	5-15	5-15	---	---	---	10-20
Perennial forbs	PPFF	2-5	2-5	5-10	5-10	T-5	5-10
Shadscale	ATCO	20-30	20-30	10-20	10-20	---	---
Bud sagebrush	ARSP5	10-20	10-20	5-10	5-10	---	5-15
Bailey greasewood	SAVEB	---	---	5-10	5-10	---	---
Sickle saltbush	ATFA	---	---	---	---	50-65	---
Winterfat	EULA5	---	---	---	---	---	40-60
Other shrubs	SSSS	5-10	5-10	5-15	5-15	---	---
Range site number		027X028N	027X028N	027X030N	027X030N	024X012N	027X014N
Potential production (lb/acre):							
Favorable years		700	700	400	400	700	600
Normal years		500	500	300	300	400	400
Unfavorable years		300	300	200	200	200	200

987--Mazuma-Yipor association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Mazuma	Yipor	1	2	3	4
Bluegrass	POA++	10-30	---	---	---	---	---
Indian ricegrass	ORHY	---	5-10	---	5-10	30-50	20-40
Bottlebrush squirreltail	SIHY	---	5-10	---	2-10	---	---
Inland saltgrass	DISPS2	---	2-5	---	---	---	---
Needleandthread	STCO4	---	---	---	---	2-10	---
Other perennial grasses	PPGG	5-15	---	---	---	2-10	10-20
Perennial forbs	PPFF	2-5	3-7	---	2-5	2-5	5-10
Shadscale	ATCO	20-30	20-40	---	---	---	---
Bud sagebrush	ARSP5	10-20	2-10	---	---	---	5-15
Black greasewood	SAVE4	---	5-20	---	---	---	---
Seepweed	SUAED	---	5-15	---	---	---	---
Bailey greasewood	SAVEB	---	2-10	---	5-20	---	---
Littleleaf horsebrush	TEGL	---	---	---	5-25	---	---
Rubber rabbitbrush	CHNA2	---	---	---	5-20	---	---
Spiny hopsage	GRSP	---	---	---	5-20	---	---
Burrobrush	HYMEN3	---	---	---	5-10	---	---
Fourwing saltbush	ATCA2	---	---	---	5-10	5-15	---
Winterfat	EULA5	---	---	---	---	2-10	40-60
Nevada dalea	PSPO	---	---	---	---	2-10	---
Other shrubs	SSSS	5-10	---	---	---	5-10	---
Range site number		027X028N	027X024N	None	027X022N	027X009N	027X014N
Potential production (lb/acre):							
Favorable years		700	600	---	400	800	600
Normal years		500	400	---	200	450	400
Unfavorable years		300	200	---	50	200	200

988--Mazuma very fine sandy loam, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Mazuma	1	2	3	4
Bluegrass	POA++	10-30	---	---	---	---
Inland saltgrass	DISPS2	---	5-10	---	---	---
Indian ricegrass	ORHY	---	---	40-50	10-20	---
Needleandthread	STCO4	---	---	10-20	---	---
Basin wildrye	ELCI2	---	---	2-5	---	2-5
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	2-5
Other perennial grasses	PPGG	5-15	5-15	---	---	10-25
Perennial forbs	PPFF	2-5	3-7	5-10	3-7	2-5
Shadscale	ATCO	20-30	2-10	---	15-30	---
Bud sagebrush	ARSP5	10-20	---	---	5-15	---
Black greasewood	SAVE4	---	40-60	10-15	---	---
Seepweed	SUAED	---	2-5	---	---	---
Winterfat	EULA5	---	---	5-10	---	---
Nevada dalea	PSPO	---	---	2-5	---	---
Bailey greasewood	SAVEB	---	---	---	5-30	---
Wyoming big sagebrush	ARTRW	---	---	---	---	5-15
Basin big sagebrush	ARTRT	---	---	---	---	5-15
Rabbitbrush	CHRYS9	---	---	---	---	10-30
Spiny hopsage	GRSP	---	---	---	---	10-20
Other shrubs	SSSS	5-10	5-15	---	---	---
Range site number		O27XO28N	O27XO25N	O27XO12N	O27XO18N	O27XO29N
Potential production (lb/acre):						
Favorable years		700	400	500	500	800
Normal years		500	200	400	300	500
Unfavorable years		300	50	300	100	100

990--Argenta very fine sandy loam, 0 to 2 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Argenta	1	2	3
Basin wildrye	ELCI2	40-60	5-15	---	40-60
Alkali sacaton	SPAI	15-30	---	---	15-30
Inland saltgrass	DISPS2	5-10	5-10	---	5-10
Bottlebrush squirreltail	SIHY	---	---	5-10	---
Other perennial grasses	PPGG	---	---	T-10	---
Perennial forbs	PPFF	---	T-5	2-8	---
Black greasewood	SAVE4	5-15	60-75	15-30	5-15
Alkali Rabbitbrush	CHAL9	1-2	---	---	1-2
Rubber rabbitbrush	CHNA2	1-2	---	---	1-2
Shadscale	ATCO	---	---	30-50	---
Bud sagebrush	ARSP5	---	---	5-15	---
Seepweed	SUAED	---	---	2-15	---
Range site number		024X007N	024X011N	024X003N	024X007N
Potential production (lb/acre):					
Favorable years		1,900	500	600	1,900
Normal years		1,400	350	450	1,400
Unfavorable years		800	200	300	800

1020--Wholan very fine sandy loam, rarely flooded, 0 to 2 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Wholan	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	2-10
Indian ricegrass	ORHY	5-15	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-10
Needleandthread	STCO4	1-3	1-3	---
Thurber needlegrass	STTH2	---	---	10-20
Tapertip hawksbeard	CRAC2	---	---	1-2
Globemallow	SPHAE	---	---	1-2
Phlox	PHLOX	---	---	1-2
Other perennial forbs	PPFF	2-8	2-8	---
Shadscale	ATCO	30-40	30-40	---
Bud sagebrush	ARSP5	20-30	20-30	---
Spiny hopsage	GRSP	2-5	2-5	5-15
Winterfat	EULA5	2-5	2-5	---
Wyoming big sagebrush	ARTRW	---	---	30-35
Range site number		024X002N	024X002N	024X020N
Potential production (lb/acre):				
Favorable years		700	700	700
Normal years		450	450	450
Unfavorable years		300	300	300

1030--Wendane-Yobe association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Wendane	Yobe	1	2
Basin wildrye	ELCI2	20-40	5-15	---	---
Inland saltgrass	DISPS2	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	5-15
Indian ricegrass	ORHY	---	---	---	5-15
Sandberg bluegrass	POSE	---	---	---	2-5
Needleandthread	STCO4	---	---	---	1-3
Other perennial grasses	PPGG	---	---	T-10	---
Perennial forbs	PPFF	2-8	T-5	2-8	2-8
Torrey quailbush	ATTO	30-50	---	---	---
Black greasewood	SAVE4	5-15	60-75	15-30	---
Basin big sagebrush	ARTRT	2-10	---	---	---
Shadscale	ATCO	---	---	30-50	30-40
Bud sagebrush	ARSP5	---	---	5-15	20-30
Seepweed	SUAED	---	---	2-15	---
Spiny hopsage	GRSP	---	---	---	2-5
Winterfat	EULA5	---	---	---	2-5
Range site number		024X015N	024X011N	024X003N	024X002N
Potential production (lb/acre):					
Favorable years		1,500	500	600	700
Normal years		1,200	350	450	450
Unfavorable years		800	200	300	300

1070--Hoot-Burrita-Bojo association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hoot	Burrita	Bojo	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	---	2-10	2-10	---	---	---
Indian ricegrass	ORHY	5-15	---	2-10	2-10	---	---	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---	---	---
Needleandthread	STCO4	1-3	---	---	---	---	---	---
Thurber needlegrass	STTH2	---	20-50	2-5	2-5	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---	---	---
Webber ricegrass	STWE	---	---	2-10	2-10	---	---	---
Desert needlegrass	STSP3	---	---	2-5	2-5	---	---	---
Pine bluegrass	POSC	---	---	2-5	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	---	1-5	---
Balsamroot	BALSA	---	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---	---	---
Eriogonum	ERIOG	---	---	1-2	1-2	---	---	---
Hawksbeard	CREPI	---	---	1-2	1-2	---	---	---
Other perennial forbs	PPFF	2-8	---	---	---	---	---	---
Shadscale	ATCO	30-40	---	10-25	10-25	---	---	---
Bud sagebrush	ARSP5	20-30	---	2-5	2-5	---	---	---
Spiny hopsage	GRSP	2-5	2-5	5-15	5-15	---	---	---
Winterfat	EULA5	2-5	---	---	---	---	---	---
Wyoming big sagebrush	ARTRW	---	15-20	10-25	10-25	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	2-5	2-5	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Other shrubs	SSSS	---	2-10	---	---	---	---	---
Range site number		024X002N	024X005N	024X026N	024X026N	None	025X003N	None
Potential production (lb/acre):								
Favorable years		700	800	400	---	---	2,500	---
Normal years		450	600	300	---	---	1,900	---
Unfavorable years		300	400	200	---	---	1,200	---

1071--Hoot-Wiskan-Atlow association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Hoot	Wiskan	Atlow	1	2	3	4
Bottlebrush squirreltail	SIHY	5-15	---	---	---	---	X	---
Indian ricegrass	ORHY	5-15	2-10	10-15	---	---	X	---
Sandberg bluegrass	POSE	2-5	---	---	---	---	---	---
Needleandthread	STCO4	1-3	---	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	10-20	---	---	20-30	---	---
Thurber needlegrass	STTH2	---	5-15	10-15	---	2-10	---	---
Bluegrass	POA++	---	2-10	2-10	---	---	X	---
Idaho fescue	FEID	---	---	---	---	20-40	---	---
Basin wildrye	ELCI2	---	---	---	---	2-15	---	50-60
Desert needlegrass	STSP3	---	---	---	---	---	X	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	5-20	---	---	X	---
Tapertip hawksbeard	CRAC2	---	2-5	---	---	1-5	---	---
Globemallow	SPHAE	---	---	2-5	---	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	---	1-5	---	---
Lupine	LUPIN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	2-8	5-15	---	---	---	X	---
Shadscale	ATCO	30-40	---	---	---	---	---	---
Bud sagebrush	ARSP5	20-30	---	---	---	---	---	---
Spiny hopsage	GRSP	2-5	---	---	---	---	---	---
Winterfat	EULA5	2-5	---	---	---	---	---	---
Black sagebrush	ARARN	---	15-30	25-35	---	---	X	---
Mountain big sagebrush	ARVA2	---	---	---	---	5-15	---	---
Ephedra	EPHED	---	---	---	---	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	5-35	---	---	---	---
Utah juniper	JUOS	---	---	---	---	---	X	---
Range site number		024X002N	024X031N	024X030N	None	024X021N	027X075N	025X003N
Potential production (lb/acre):								
Favorable years		700	700	500	---	1,400	500	2,500
Normal years		450	500	350	---	1,000	400	1,900
Unfavorable years		300	300	250	---	700	300	1,200

1073--Hoot, steep-Bojo-Hoot association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Hoot, steep	Bojo	Hoot	1	2	3
Bottlebrush squirreltail	SIHY	5-15	2-10	5-15	---	5-15	5-15
Indian ricegrass	ORHY	5-15	2-10	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5	2-5
Needleandthread	STCO4	1-3	---	1-3	---	1-3	1-3
Webber ricegrass	STWE	---	2-10	---	---	---	---
Thurber needlegrass	STTH2	---	2-5	---	---	---	---
Desert needlegrass	STSP3	---	2-5	---	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---
Mat muhly	MURI	---	---	---	2-10	---	---
Sedge	CAREX	---	---	---	1-5	---	---
Eriogonum	ERIOG	---	1-2	---	---	---	---
Hawksbeard	CREPI	---	1-2	---	---	---	---
Other perennial forbs	PPFF	2-8	---	2-8	---	2-8	2-8
Shadscale	ATCO	30-40	10-25	30-40	---	30-40	30-40
Bud sagebrush	ARSP5	20-30	2-5	20-30	---	20-30	20-30
Spiny hopsage	GRSP	2-5	5-15	2-5	---	2-5	2-5
Winterfat	EULA5	2-5	---	2-5	---	2-5	2-5
Wyoming big sagebrush	ARTRW	---	10-25	---	---	---	---
Downy rabbitbrush	CHVIP	---	2-5	---	---	---	---
Basin big sagebrush	ARTRT	---	---	---	10-15	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---
Range site number		024X002N	024X026N	024X002N	025X003N	024X002N	024X002N
Potential production (lb/acre):							
Favorable years		700	400	700	2,500	700	700
Normal years		450	300	450	1,900	450	450
Unfavorable years		300	200	300	1,200	300	300

1090--Bojo Variant-Schamp-Trunk association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Bojo Variant	Schamp	Trunk	1	2	3
Bottlebrush squirreltail	SIHY	2-10	---	---	---	---	---
Indian ricegrass	ORHY	2-10	---	---	---	---	10-15
Webber ricegrass	STWE	2-10	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	20-50	20-50	---	---	10-15
Desert needlegrass	STSP3	2-5	---	---	---	---	---
Sandberg bluegrass	POSE	2-5	---	---	---	---	---
Pine bluegrass	POSC	2-5	---	---	---	---	---
Bluebunch wheatgrass	AGSP	---	5-10	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	1-5	---
Bluegrass	POA++	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	---	---	5-20
Eriogonum	ERIOG	1-2	---	---	---	---	---
Hawksbeard	CREPI	1-2	---	---	---	---	---
Balsamroot	BALSA	---	2-4	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	2-4	---	---	---
Globemallow	SPHAE	---	---	---	---	---	2-5
Wyoming big sagebrush	ARTRW	10-25	15-20	15-20	---	---	---
Shadscale	ATCO	10-25	---	---	---	---	---
Spiny hopsage	GRSP	5-15	2-5	2-5	---	---	---
Bud sagebrush	ARSP5	2-5	---	---	---	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	10-15	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Black sagebrush	ARARN	---	---	---	---	---	25-35
Other shrubs	SSSS	---	2-10	2-10	---	---	5-35
Range site number		024X026N	024X005N	024X005N	None	025X003N	024X030N
Potential production (lb/acre):							
Favorable years		400	800	800	---	2,500	500
Normal years		300	600	600	---	1,900	350
Unfavorable years		200	400	400	---	1,200	250

1111--Yipor silt loam, sandy substratum

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Yipor	1	2	3	4
Bottlebrush squirreltail	SIHY	5-10	5-15	2-10	---	---
Indian ricegrass	ORHY	---	5-15	---	---	---
Sandberg bluegrass	POSE	---	2-5	---	---	---
Needleandthread	STCO4	---	1-3	---	---	---
Bluegrass	POA++	---	---	10-30	---	---
Basin wildrye	ELCI2	---	---	---	20-40	50-60
Western wheatgrass	AGSM	---	---	---	---	5-15
Other perennial grasses	PPGG	T-10	---	---	---	---
Perennial forbs	PPFF	2-8	2-8	5-10	2-8	2-8
Shadscale	ATCO	30-50	30-40	10-20	---	---
Black greasewood	SAVE4	15-30	---	---	5-15	2-10
Bud sagebrush	ARSP5	5-15	20-30	5-10	---	---
Seepweed	SUAED	2-15	---	---	---	---
Spiny hopsage	GRSP	---	2-5	---	---	---
Winterfat	EULA5	---	2-5	---	---	---
Bailey greasewood	SAVEB	---	---	5-10	---	---
Torrey quailbush	ATTO	---	---	---	30-50	---
Basin big sagebrush	ARTRT	---	---	---	2-10	15-20
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	---	---	5-15	---	---
Range site number		024X003N	024X002N	027X030N	024X015N	024X006N
Potential production (lb/acre):						
Favorable years		600	700	400	1,500	1,500
Normal years		450	450	300	1,200	1,100
Unfavorable years		300	300	200	800	600

1112--Yipor silt loam

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions	
		Soil name	Inclusion number--
		Yipor	1
Bottlebrush squirreltail	SIHY	5-10	5-15
Indian ricegrass	ORHY	---	5-15
Sandberg bluegrass	POSE	---	2-5
Needleandthread	STCO4	---	1-3
Other perennial grasses	PPGG	T-10	---
Perennial forbs	PPFF	2-8	2-8
Shadscale	ATCO	30-50	30-40
Black greasewood	SAVE4	15-30	---
Bud sagebrush	ARSP5	5-15	20-30
Seepweed	SUAED	2-15	---
Spiny hopsage	GRSP	---	2-5
Winterfat	EULA5	---	2-5
Range site number		024X003N	024X002N
Potential production (lb/acre):			
Favorable years		600	700
Normal years		450	450
Unfavorable years		300	300

1113--Yipor-Badland association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Yipor	Badland	1	2
Indian ricegrass	ORHY	5-10	---	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---	---
Inland saltgrass	DISPS2	2-5	---	5-10	---
Basin wildrye	ELCI2	---	---	30-50	---
Alkali sacaton	SPAI	---	---	5-10	---
Creeping wildrye	ELTR3	---	---	5-10	---
Bluegrass	POA++	---	---	---	10-30
Other perennial grasses	PPGG	2-5	---	---	5-15
Perennial forbs	PPFF	3-7	---	5-10	2-5
Shadscale	ATCO	20-40	---	5-15	20-30
Black greasewood	SAVE4	5-20	---	5-15	---
Seepweed	SUAED	5-15	---	---	---
Bailey greasewood	SAVEB	2-10	---	---	---
Bud sagebrush	ARSP5	2-10	---	---	10-20
Basin big sagebrush	ARTRT	---	---	2-5	---
Rubber rabbitbrush	CHNA2	---	---	2-5	---
Other shrubs	SSSS	---	---	---	5-10
Range site number		027X024N	None	027X006N	027X028N
Potential production (lb/acre):					
Favorable years		600	---	2,000	700
Normal years		400	---	1,500	500
Unfavorable years		200	---	1,000	300

1114--Yipor silt loam, occasionally flooded

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Yipor	1	2
Indian ricegrass	ORHY	10-30	5-15	---
Bottlebrush squirreltail	SIHY	5-10	5-15	---
Alkali sacaton	SPAI	T-5	---	---
Sandberg bluegrass	POSE	---	2-5	---
Needleandthread	STCO4	---	1-3	---
Perennial forbs	PPFF	T-5	2-8	---
Sickle saltbush	ATFA	50-65	---	---
Shadscale	ATCO	---	30-40	---
Bud sagebrush	ARSP5	---	20-30	---
Spiny hopsage	GRSP	---	2-5	---
Winterfat	EULA5	---	2-5	---
Range site number		024X012N	024X002N	None
Potential production (lb/acre):				
Favorable years		700	700	---
Normal years		400	450	---
Unfavorable years		200	300	---

1121--Genegraf-Chilper-Bluewing association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genegraf	Chilper	Bluewing	1	2	3
Bluegrass	POA++	10-30	10-30	10-30	10-30	---	---
Bottlebrush squirreltail	SIHY	2-10	---	2-10	2-10	5-10	2-10
Indian ricegrass	ORHY	---	---	---	---	5-10	5-10
Inland saltgrass	DISPS2	---	---	---	---	2-5	---
Other perennial grasses	PPGG	---	5-15	---	---	2-5	---
Shadscale	ATCO	10-20	20-30	10-20	10-20	20-40	---
Bailey greasewood	SAVEB	5-10	---	5-10	5-10	2-10	5-20
Bud sagebrush	ARSP5	5-10	10-20	5-10	5-10	2-10	---
Black greasewood	SAVE4	---	---	---	---	5-20	---
Seepweed	SUAED	---	---	---	---	5-15	---
Littleleaf horsebrush	TEGL	---	---	---	---	---	5-25
Rubber rabbitbrush	CHNA2	---	---	---	---	---	5-20
Spiny hopsage	GRSP	---	---	---	---	---	5-20
Burrobrush	HYMEN3	---	---	---	---	---	5-10
Fourwing saltbush	ATCA2	---	---	---	---	---	5-10
Other shrubs	SSSS	5-15	5-10	5-15	5-15	---	---
Range site number		027X030N	027X028N	027X030N	027X030N	027X024N	027X022N
Potential production (lb/acre):							
Favorable years		400	700	400	400	600	400
Normal years		300	500	300	300	400	200
Unfavorable years		200	300	200	200	200	50

1122--Genegraf-Trocken-Bluewing association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Genegraf	Trocken	Bluewing	1	2	3
Bluegrass	POA++	10-30	10-30	---	---	---	10-30
Bottlebrush squirreltail	SIHY	2-10	---	2-10	---	2-10	---
Indian ricegrass	ORHY	---	---	5-10	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Basin wildrye	ELCI2	---	---	---	2-5	---	---
Other perennial grasses	PPGG	---	5-15	---	10-25	---	5-15
Shadscale	ATCO	10-20	20-30	---	---	---	20-30
Bailey greasewood	SAVEB	5-10	---	5-20	---	5-20	---
Bud sagebrush	ARSP5	5-10	10-20	---	---	---	10-20
Littleleaf horsebrush	TEGL	---	---	5-25	---	5-25	---
Rubber rabbitbrush	CHNA2	---	---	5-20	---	5-20	---
Spiny hopsage	GRSP	---	---	5-20	10-20	5-20	---
Burrobrush	HYMEN3	---	---	5-10	---	5-10	---
Fourwing saltbush	ATCA2	---	---	5-10	---	5-10	---
Wyoming big sagebrush	ARTRW	---	---	---	5-15	---	---
Basin big sagebrush	ARTRT	---	---	---	5-15	---	---
Rabbitbrush	CHRYS9	---	---	---	10-30	---	---
Other shrubs	SSSS	5-15	5-10	---	---	---	5-10
Range site number		027X030N	027X028N	027X022N	027X029N	027X022N	027X028N
Potential production (lb/acre):							
Favorable years		400	700	400	800	400	700
Normal years		300	500	200	500	200	500
Unfavorable years		200	300	50	100	50	300

1130--Cleaver-Trocken-Bluewing association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Cleaver	Trocken	Bluewing	1	2	3
Bluegrass	POA++	10-30	10-30	---	10-30	10-30	10-30
Indian ricegrass	ORHY	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-10	2-10	---	---
Other perennial grasses	PPGG	5-15	5-15	---	---	5-15	5-15
Perennial forbs	PPFF	2-5	2-5	2-5	5-10	2-5	2-5
Shadscale	ATCO	20-30	20-30	---	10-20	20-30	20-30
Bud sagebrush	ARSP5	10-20	10-20	---	5-10	10-20	10-20
Littleleaf horsebrush	TEGL	---	---	5-25	---	---	---
Rubber rabbitbrush	CHNA2	---	---	5-20	---	---	---
Bailey greasewood	SAVEB	---	---	5-20	5-10	---	---
Spiny hopsage	GRSP	---	---	5-20	---	---	---
Burrobrush	HYMEN3	---	---	5-10	---	---	---
Fourwing saltbush	ATCA2	---	---	5-10	---	---	---
Other shrubs	SSSS	5-10	5-10	---	5-15	5-10	5-10
Range site number		027X028N	027X028N	027X022N	027X030N	027X028N	027X028N
Potential production (lb/acre):							
Favorable years		700	700	400	400	700	700
Normal years		500	500	200	300	500	500
Unfavorable years		300	300	50	200	300	300

1140--Layview, very steep-Tusel-Layview association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Layview, very steep	Tusel	Layview	1	2	3	4
Idaho fescue	FEID	25-50	5-15	10-20	30-60	25-50	---	---
Bluebunch wheatgrass	AGSP	15-30	5-10	---	5-10	15-30	---	---
Thurber needlegrass	STTH2	2-10	---	---	---	2-10	---	---
Spike fescue	LEKI2	2-10	2-15	---	---	2-10	---	---
Mountain brome	BRACA5	---	10-15	---	2-5	---	---	---
Slender wheatgrass	AGTR	---	10-15	---	---	---	---	2-5
Bulbous oniongrass	MEBU	---	2-5	---	---	---	---	---
Nevada bluegrass	PONE3	---	2-5	---	---	---	---	---
Webber ricegrass	STWE	---	---	5-10	---	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---	---
Cusick bluegrass	POCU3	---	---	2-5	5-10	---	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---	---	---
Pine bluegrass	POSC	---	---	2-5	---	---	---	---
Sedge	CAREX	---	---	---	2-5	---	---	---
Letterman needlegrass	STLE4	---	---	---	---	---	---	60-70
Columbia needlegrass	STNE3	---	---	---	---	---	---	2-5
Balsamroot	BALSA	2-5	---	---	---	2-5	---	---
Geranium	GERAN	---	2-5	---	---	---	---	---
Groundsel	SENEC	---	2-5	---	---	---	---	---
Lupine	LUPIN	---	2-5	---	1-2	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---	---	---
Phlox	PHLOX	---	---	2-5	---	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	1-3	---	---	---
Tailcup lupine	LUCA	---	---	---	---	---	---	20-40
Low sagebrush	ARAR8	10-20	---	5-15	---	10-20	---	---
Douglas rabbitbrush	CHVI8	2-5	---	---	---	2-5	---	---
Serviceberry	AMELA	---	5-10	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-10	1-5	5-15	---	---	---
Snowberry	SYMPH	---	2-10	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---	---	---
Other shrubs	SSSS	---	---	---	---	---	---	---
Range site number		024X027N	024X032N	024X016N	024X023N	024X027N	None	025X028N
Potential production (lb/acre):								
Favorable years		1,200	2,200	350	1,500	1,200	---	1,000
Normal years		800	1,700	250	1,200	800	---	800
Unfavorable years		600	1,200	150	900	600	---	500

1160--Slaw-Ragtown association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name		Inclusion number--	
		Slaw	Ragtown	1	2
Basin wildrye	ELCI2	15-25	---	---	15-25
Alkali sacaton	SPAI	5-10	---	---	5-10
Bottlebrush squirreltail	SIHY	5-10	---	---	5-10
Inland saltgrass	DISPS2	---	5-10	5-10	---
Other perennial grasses	PPGG	---	5-15	5-15	---
Perennial forbs	PPFF	5-10	3-7	3-7	5-10
Torrey quailbush	ATTO	50-60	---	---	50-60
Black greasewood	SAVE4	5-15	40-60	40-60	5-15
Fourwing saltbush	ATCA2	2-5	---	---	2-5
Shadscale	ATCO	2-5	2-10	2-10	2-5
Seepweed	SUAED	---	2-5	2-5	---
Other shrubs	SSSS	---	5-15	5-15	---
Range site number		027X041N	027X025N	027X025N	027X041N
Potential production (lb/acre):					
Favorable years		1,500	400	400	1,500
Normal years		1,000	200	200	1,000
Unfavorable years		600	50	50	600

1200--Bluewing, moderately steep-Bluewing-Daick association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Bluewing, moderately steep	Bluewing	Daick	1	2	3	4
Indian ricegrass	ORHY	10-20	10-20	5-20	10-20	---	5-15	5-10
Bottlebrush squirreltail	SIHY	5-10	5-10	---	5-10	---	5-10	5-10
Desert needlegrass	STSP3	---	---	2-10	---	---	---	---
Pine bluegrass	POSC	---	---	---	---	---	5-15	---
Inland saltgrass	DISPS2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	2-5	---	---	5-10	2-5
Perennial forbs	PPFF	3-7	3-7	5-10	3-7	---	5-10	3-7
Shadscale	ATCO	15-30	15-30	10-20	15-30	---	---	20-40
Bailey greasewood	SAVEB	5-30	5-30	5-15	5-30	---	---	2-10
Bud sagebrush	ARSP5	5-15	5-15	2-10	5-15	---	---	2-10
Nevada ephedra	EPNE	---	---	2-5	---	---	5-10	---
Wyoming big sagebrush	ARTRW	---	---	---	---	---	10-20	---
Spiny hopsage	GRSP	---	---	---	---	---	10-20	---
Black greasewood	SAVE4	---	---	---	---	---	---	5-20
Seepweed	SUAED	---	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	5-10	---	---	---	---
Range site number		027X018N	027X018N	027X027N	027X018N	None	027X008N	027X024N
Potential production (lb/acre):								
Favorable years		500	500	200	500	---	700	600
Normal years		300	300	100	300	---	500	400
Unfavorable years		100	100	50	100	---	300	200

1201--Bluewing gravelly sandy loam, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Bluewing	1	2
Indian ricegrass	ORHY	10-20	---	---
Bottlebrush squirreltail	SIHY	5-10	---	---
Bluegrass	POA++	---	10-30	---
Inland saltgrass	DISPS2	---	---	5-10
Other perennial grasses	PPGG	---	5-15	5-15
Perennial forbs	PPFF	3-7	2-5	3-7
Shadscale	ATCO	15-30	20-30	2-10
Bailey greasewood	SAVEB	5-30	---	---
Bud sagebrush	ARSP5	5-15	10-20	---
Black greasewood	SAVE4	---	---	40-60
Seepweed	SUAED	---	---	2-5
Other shrubs	SSSS	---	5-10	5-15
Range site number		027X018N	027X028N	027X025N
Potential production (lb/acre):				
Favorable years		500	700	400
Normal years		300	500	200
Unfavorable years		100	300	50

1210--Daick-Rezave-Rubble land association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Daick	Rezave	Rubble land	1	2	3
Indian ricegrass	ORHY	5-20	---	---	---	---	5-10
Desert needlegrass	STSP3	2-10	---	---	---	---	---
Bluegrass	POA++	---	10-30	---	10-30	10-30	---
Bottlebrush squirreltail	SIHY	---	2-10	---	2-10	2-10	2-10
Other perennial grasses	PPGG	2-5	---	---	---	---	---
Perennial forbs	PPFF	5-10	5-10	---	5-10	5-10	2-5
Shadscale	ATCO	10-20	10-20	---	10-20	10-20	---
Bailey greasewood	SAVEB	5-15	5-10	---	5-10	5-10	5-20
Bud sagebrush	ARSP5	2-10	5-10	---	5-10	5-10	---
Nevada ephedra	EPNE	2-5	---	---	---	---	---
Littleleaf horsebrush	TEGL	---	---	---	---	---	5-25
Rubber rabbitbrush	CHNA2	---	---	---	---	---	5-20
Spiny hopsage	GRSP	---	---	---	---	---	5-20
Burrobrush	HYMEN3	---	---	---	---	---	5-10
Fourwing saltbush	ATCA2	---	---	---	---	---	5-10
Other shrubs	SSSS	5-10	5-15	---	5-15	5-15	---
Range site number		027X027N	027X030N	None	027X030N	027X030N	027X022N
Potential production (lb/acre):							
Favorable years		200	400	---	400	400	400
Normal years		100	300	---	300	300	200
Unfavorable years		50	200	---	200	200	50

1230--Knott-Sodhouse-Wholan association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Knott	Sodhouse	Wholan	1	2
Bottlebrush squirreltail	SIHY	5-15	5-15	5-15	---	5-15
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	2-5	---	2-5
Needleandthread	STCO4	1-3	1-3	1-3	---	1-3
Thurber needlegrass	STTH2	---	---	---	20-50	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---
Balsamroot	BALSA	---	---	---	2-4	---
Tapertip hawksbeard	CRAC2	---	---	---	2-4	---
Other perennial forbs	PPFF	2-8	2-8	2-8	---	2-8
Shadscale	ATCO	30-40	30-40	30-40	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	20-30	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5
Winterfat	EULA5	2-5	2-5	2-5	---	2-5
Wyoming big sagebrush	ARTRW	---	---	---	15-20	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	2-10	---
Range site number		024X002N	024X002N	024X002N	024X005N	024X002N
Potential production (lb/acre):						
Favorable years		700	700	700	800	700
Normal years		450	450	450	600	450
Unfavorable years		300	300	300	400	300

1231--Knott-Sodhouse-Cortez association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Knott	Sodhouse	Cortez	1	2	3
Bottlebrush squirreltail	SIHY	5-15	5-15	---	2-10	---	5-15
Indian ricegrass	ORHY	5-15	5-15	---	5-15	---	5-15
Sandberg bluegrass	POSE	2-5	2-5	---	2-10	---	2-5
Needleandthread	STCO4	1-3	1-3	---	---	---	1-3
Thurber needlegrass	STTH2	---	---	20-50	10-20	---	---
Bluebunch wheatgrass	AGSP	---	---	5-10	---	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60	---
Western wheatgrass	AGSM	---	---	---	---	5-15	---
Balsamroot	BALSA	---	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	---	2-4	1-2	---	---
Globemallow	SPHAE	---	---	---	1-2	---	---
Phlox	PHLOX	---	---	---	1-2	---	---
Other perennial forbs	PPFF	2-8	2-8	---	---	2-8	2-8
Shadscale	ATCO	30-40	30-40	---	---	---	30-40
Bud sagebrush	ARSP5	20-30	20-30	---	---	---	20-30
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	---	2-5
Winterfat	EULA5	2-5	2-5	---	---	---	2-5
Wyoming big sagebrush	ARTRW	---	---	15-20	30-35	---	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	15-20	---
Black greasewood	SAVE4	---	---	---	---	2-10	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Other shrubs	SSSS	---	---	2-10	---	---	---
Range site number		024X002N	024X002N	024X005N	024X020N	024X006N	024X002N
Potential production (lb/acre):							
Favorable years		700	700	800	700	1,500	700
Normal years		450	450	600	450	1,100	450
Unfavorable years		300	300	400	300	600	300

1232--Knott, moderately steep-Snapp-Knott association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Knott, moderately steep	Snapp	Knott	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	---	5-15	2-10
Indian ricegrass	ORHY	5-15	---	5-15	---	5-15	5-15
Sandberg bluegrass	POSE	2-5	---	2-5	---	2-5	2-10
Needleandthread	STCO4	1-3	---	1-3	---	1-3	---
Thurber needlegrass	STTH2	---	20-50	---	20-50	---	10-20
Bluebunch wheatgrass	AGSP	---	5-10	---	5-10	---	---
Balsamroot	BALSA	---	2-4	---	2-4	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	2-4	---	1-2
Globemallow	SPHAE	---	---	---	---	---	1-2
Phlox	PHLOX	---	---	---	---	---	1-2
Other perennial forbs	PPFF	2-8	---	2-8	---	2-8	---
Shadscale	ATCO	30-40	---	30-40	---	30-40	---
Bud sagebrush	ARSP5	20-30	---	20-30	---	20-30	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5	5-15
Winterfat	EULA5	2-5	---	2-5	---	2-5	---
Wyoming big sagebrush	ARTRW	---	15-20	---	15-20	---	30-35
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	---	---
Other shrubs	SSSS	---	2-10	---	2-10	---	---
Range site number		024X002N	024X005N	024X002N	024X005N	024X002N	024X020N
Potential production (lb/acre):							
Favorable years		700	800	700	800	700	700
Normal years		450	600	450	600	450	450
Unfavorable years		300	400	300	400	300	300

1270--Gol-Say association

(The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Gol	Say	1	2	3	4
Bluebunch wheatgrass	AGSP	40-60	20-30	20-30	---	---	X
Thurber needlegrass	STTH2	5-10	2-10	15-25	---	---	X
Bluegrass	POA++	2-10	---	---	---	---	X
Basin wildrye	ELCI2	2-5	2-15	---	---	---	---
Idaho fescue	FEID	---	0-40	---	10-20	---	---
Nevada bluegrass	PONE3	---	---	2-10	---	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	X
Cusick bluegrass	POCU3	---	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Indian ricegrass	ORHY	---	---	---	---	---	X
Other perennial grasses	PPGG	---	---	10-15	---	---	X
Tapertip hawksbeard	CRAC2	2-5	1-5	2-5	---	---	---
Arrowleaf balsamroot	BASA3	2-5	1-5	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---
Phlox	PHLOX	---	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	---	---	---	X
Wyoming big sagebrush	ARTRW	5-10	---	---	---	---	X
Mountain big sagebrush	ARVA2	T-5	5-15	2-5	1-5	---	---
Basin big sagebrush	ARTRT	---	---	5-10	---	---	---
Low sagebrush	ARAR8	---	---	---	5-15	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---
Ephedra	EPHED	---	---	---	---	---	X
Other shrubs	SSSS	---	---	---	---	---	X
Utah juniper	JUOS	---	---	---	---	---	X
Range site number		024X028N	024X021N	025X014N	024X016N	None	024X052N
Potential production (lb/acre):							
Favorable years		1,000	1,400	1,000	350	---	500
Normal years		700	1,000	800	250	---	350
Unfavorable years		500	700	600	150	---	200

1271--Gol-Say-Rock outcrop association, steep

(The letter "T" means trace. An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Gol	Say	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	40-60	20-30	---	5-15	X	---
Thurber needlegrass	STTH2	5-10	2-10	---	---	X	---
Bluegrass	POA++	2-10	---	---	---	X	---
Basin wildrye	ELCI2	2-5	2-15	---	2-5	---	50-60
Idaho fescue	FEID	---	20-40	---	5-15	---	---
Mountain brome	BRCA5	---	---	---	5-10	---	---
Slender wheatgrass	AGTR	---	---	---	2-5	---	---
Letterman needlegrass	STNE3	---	---	---	2-5	---	---
Nevada bluegrass	PONE3	---	---	---	2-5	---	5-15
Cusick bluegrass	POCU3	---	---	---	2-5	---	---
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	---	---	---	X	---
Tapertip hawksbeard	CRAC2	2-5	1-5	---	---	X	---
Arrowleaf balsamroot	BASA3	2-5	1-5	---	---	X	---
Lupine	LUPIN	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	5-15	X	---
Wyoming big sagebrush	ARTRW	5-10	---	---	---	---	---
Mountain big sagebrush	ARVA2	T-5	5-15	---	5-10	X	---
Serviceberry	AMELA	---	---	---	5-10	---	---
Oceanspray	HOLOD	---	---	---	5-10	---	---
Snowberry	SYMPH	---	---	---	2-10	---	---
Threetip sagebrush	ARTR4	---	---	---	2-10	---	---
Currant	RIBES	---	---	---	2-5	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	X	---
Singleleaf pinyon	PIMO	---	---	---	---	X	---
Utah juniper	JUOS	---	---	---	---	X	---
Range site number		O24XO28N	O24XO21N	None	O24XO34N	O24XO49N	O25XO03N
Potential production (lb/acre):							
Favorable years		1,000	1,400	---	1,600	500	2,500
Normal years		700	1,000	---	1,300	350	1,900
Unfavorable years		500	700	---	800	200	1,200

1272--Gol-Say-Rock outcrop association, very steep

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Gol	Say	Rock outcrop	1	2	3
Desert needlegrass	STSP3	20-30	---	---	---	20-30	---
Indian ricegrass	ORHY	5-10	---	---	X	5-10	---
Sandberg bluegrass	POSE	2-5	5-10	---	---	2-5	---
Bottlebrush squirreltail	SIHY	2-5	2-5	---	X	2-5	---
Thurber needlegrass	STTH2	---	10-20	---	X	---	---
Basin wildrye	ELCI2	---	5-15	---	---	---	50-60
Bluebunch wheatgrass	AGSP	---	---	---	X	---	---
Bluegrass	POA++	---	---	---	X	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Other perennial grasses	PPGG	---	2-5	---	X	---	---
Other perennial forbs	PPFF	5-10	2-5	---	X	5-10	---
Littleleaf horsebrush	TEGL	10-20	---	---	---	10-20	---
Shadscale	ATCO	5-15	---	---	---	5-15	---
Mountain big sagebrush	ARVA2	---	10-20	---	---	---	---
Snowberry	SYMPH	---	5-15	---	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	X	---	---
Ephedra	EPHED	---	---	---	X	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	5-15	2-10	---	X	5-15	---
Utah juniper	JUOS	---	---	---	---	X	---
Range site number		027X017N	027X058N	None	024X052N	027X017N	025X003N
Potential production (lb/acre):							
Favorable years		400	1,200	---	500	400	2,500
Normal years		200	1,000	---	350	200	1,900
Unfavorable years		100	800	---	200	100	1,200

1280--Gwena-Enko-Frewa association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Gwena	Enko	Frewa	1	2	3
Thurber needlegrass	STTH2	10-20	10-20	10-20	20-50	10-20	10-20
Indian ricegrass	ORHY	5-15	5-15	5-15	---	5-15	5-15
Bottlebrush squirreltail	SIHY	2-10	2-10	2-10	---	2-10	2-10
Sandberg bluegrass	POSE	2-10	2-10	2-10	---	2-10	2-10
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---	---
Tapertip hawksbeard	CRAC2	1-2	1-2	1-2	2-4	1-2	1-2
Globemallow	SPHAE	1-2	1-2	1-2	---	1-2	1-2
Phlox	PHLOX	1-2	1-2	1-2	---	1-2	1-2
Balsamroot	BALSA	---	---	---	2-4	---	---
Wyoming big sagebrush	ARTRW	30-35	30-35	30-35	15-20	30-35	30-35
Spiny hopsage	GRSP	5-15	5-15	5-15	2-5	5-15	5-15
Downy rabbitbrush	CHVIP	---	---	---	2-5	---	---
Other shrubs	SSSS	---	---	---	2-10	---	---
Range site number		024X020N	024X020N	024X020N	024X005N	024X020N	024X020N
Potential production (lb/acre):							
Favorable years		700	700	700	800	700	700
Normal years		450	450	450	600	450	450
Unfavorable years		300	300	300	400	300	300

1290--Slaven-Linrose-Iver association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Slaven	Linrose	Iver	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	2-10	2-10	5-10	15-30	40-60	---
Basin wildrye	ELCI2	5-10	---	---	---	2-5	---	50-60
Mountain brome	BRCA5	2-15	---	2-5	---	---	---	---
Thurber needlegrass	STTH2	2-5	---	---	2-10	5-10	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	5-10	---
Idaho fescue	FEID	1-10	30-60	30-60	25-50	---	10-20	---
Cusick bluegrass	POCU3	---	5-10	5-10	---	---	2-5	---
Sedge	CAREX	---	---	2-5	---	---	---	1-5
Spike fescue	LEKI2	---	---	---	2-10	---	---	---
Bluegrass	POA++	---	---	---	---	2-10	---	---
Webber ricegrass	STWE	---	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Tapertip hawksbeard	CRAC2	2-5	2-5	1-3	---	2-5	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	2-5	---	---
Lupine	LUPIN	---	---	1-2	---	---	---	2-5
Balsamroot	BALSA	---	---	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	---	2-5	---
Mountain big sagebrush	ARVA2	5-15	---	5-15	---	T-5	1-5	---
Black sagebrush	ARARN	---	10-20	---	---	---	5-15	---
Snowberry	SYMPH	---	---	2-5	---	---	---	---
Low sagebrush	ARAR8	---	---	---	10-20	---	5-15	---
Douglas rabbitbrush	CHVI8	---	---	---	2-5	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	---	5-10	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Range site number		024X029N	024X042N	024X023N	024X027N	024X028N	024X016N	025X003N
Potential production (lb/acre):								
Favorable years		1,500	1,000	1,500	1,200	1,000	350	2,500
Normal years		1,100	800	1,200	800	700	250	1,900
Unfavorable years		800	500	900	600	500	150	1,200

1291--Slaven-Iver-Cleavage association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Slaven	Iver	Cleavage	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	5-10	15-30	40-60	---	---	---
Basin wildrye	ELCI2	5-10	---	---	2-5	---	50-60	---
Mountain brome	BRCA5	2-15	2-5	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	---	2-10	5-10	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---	---	5-10
Idaho fescue	FEID	1-10	30-60	25-50	---	---	---	10-20
Cusick bluegrass	POCU3	---	5-10	---	---	---	---	2-5
Sedge	CAREX	---	2-5	---	---	---	1-5	---
Spike fescue	LEKI2	---	---	2-10	---	---	---	---
Bluegrass	POA++	---	---	---	2-10	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	---	2-10	---
Webber ricegrass	STWE	---	---	---	---	---	---	5-10
Sandberg bluegrass	POSE	---	---	---	---	---	---	2-5
Pine bluegrass	POSC	---	---	---	---	---	---	2-5
Tapertip hawksbeard	CRAC2	2-5	1-3	---	2-5	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	2-5	---	---	---
Lupine	LUPIN	---	1-2	---	---	---	2-5	---
Balsamroot	BALSA	---	---	2-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	---	2-5
Phlox	PHLOX	---	---	---	---	---	---	2-5
Mountain big sagebrush	ARAV2	5-15	5-15	---	T-5	---	---	1-5
Snowberry	SYMPH	---	2-5	---	---	---	---	---
Low sagebrush	ARAR8	---	---	10-20	---	---	---	5-15
Douglas rabbitbrush	CHVI8	---	---	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	5-10	---	---	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15	---
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5	---
Black sagebrush	ARARN	---	---	---	---	---	---	5-15
Other shrubs	SSSS	---	---	---	---	---	---	---
Range site number		O24XO29N	O24XO23N	O24XO27N	O24XO28N	None	O25XO03N	O24XO16N
Potential production (lb/acre):								
Favorable years		1,500	1,500	1,200	1,000	---	2,500	350
Normal years		1,100	1,200	800	700	---	1,900	250
Unfavorable years		800	900	600	500	---	1,200	150

1292--Slaven-Iver-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Slaven	Iver	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	20-50	5-10	---	---	5-10	---
Basin wildrye	ELCI2	5-10	---	---	---	---	---
Mountain brome	BRCA5	2-15	2-5	---	---	10-15	X
Thurber needlegrass	STTH2	2-5	---	---	---	---	---
Bottlebrush squirreltail	SIHY	2-5	---	---	5-10	---	---
Idaho fescue	FEID	2-5	30-60	---	10-20	5-15	X
Cusick bluegrass	POCU3	---	5-10	---	2-5	---	---
Sedge	CAREX	---	2-5	---	---	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---
Slender wheatgrass	AGTR	---	---	---	---	10-15	X
Spike fescue	LEKI2	---	---	---	---	2-15	---
Bulbous oniongrass	MEBU	---	---	---	---	2-5	---
Nevada bluegrass	PONE3	---	---	---	---	2-5	---
Bluegrass	POA++	---	---	---	---	---	X
Other perennial grasses	PPGG	---	---	---	---	---	X
Tapertip hawksbeard	CRAC2	2-5	1-3	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	---	---	---	---
Lupine	LUPIN	---	1-2	---	---	2-5	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---
Phlox	PHLOX	---	---	---	2-5	---	---
Geranium	GERAN	---	---	---	---	2-5	---
Groundsel	SENEC	---	---	---	---	2-5	---
Meadowrue	THALI2	---	---	---	---	---	X
Other perennial forbs	PPFF	---	---	---	---	---	X
Mountain big sagebrush	ARVA2	5-15	5-15	---	1-5	5-10	X
Snowberry	SYMPH	---	2-5	---	---	2-10	X
Low sagebrush	ARAR8	---	---	---	5-15	---	---
Black sagebrush	ARARN	---	---	---	5-15	---	---
Serviceberry	AMELA	---	---	---	---	5-10	X
Other shrubs	SSSS	---	---		---	---	X
Quaking aspen	POTRT	---	---	---	---	---	X
Range site number		024X029N	024X023N	None	024X016N	024X032N	025X065N
Potential production (lb/acre):							
Favorable years		1,500	1,500	---	350	2,200	800
Normal years		1,100	1,200	---	250	1,700	600
Unfavorable years		800	900	---	150	1,200	400

1320--Alyan-Chen-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Alyan	Chen	Rock outcrop	1	2	3
Idaho fescue	FEID	20-40	25-50	---	20-40	20-40	---
Bluebunch wheatgrass	AGSP	20-30	15-30	---	20-30	10-40	---
Basin wildrye	ELCI2	2-15	---	---	2-15	2-5	50-60
Thurber needlegrass	STTH2	2-10	2-10	---	2-10	5-10	---
Spike fescue	LEKI2	---	2-10	---	---	---	---
Letterman needlegrass	STLE4	---	---	---	---	2-5	---
Columbia needlegrass	STNE3	---	---	---	---	2-5	---
Cusick bluegrass	POCU3	---	---	---	---	2-5	---
Sedge	CAREX	---	---	---	---	2-5	1-5
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Tapertip hawksbeard	CRAC2	1-5	---	---	1-5	1-4	---
Arrowleaf balsamroot	BASA3	1-5	---	---	1-5	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---
Mountain big sagebrush	ARVA2	5-15	---	---	5-15	---	---
Low sagebrush	ARAR8	---	10-20	---	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---
Threetip sagebrush	ARTR4	---	---	---	---	15-25	---
Rabbitbrush	CHRYS9	---	---	---	---	2-5	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---	---
Range site number		024X021N	024X027N	None	024X021N	024X046N	025X003N
Potential production (lb/acre):							
Favorable years		1,400	1,200	---	1,400	1,100	2,500
Normal years		1,000	800	---	1,000	900	1,900
Unfavorable years		700	600	---	700	600	1,200

1321--Alyan-Slaven association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Alyan	Slaven	1	2	3	4
Idaho fescue	FEID	20-40	1-10	1-10	20-40	---	---
Bluebunch wheatgrass	AGSP	20-30	20-50	20-50	20-30	---	---
Basin wildrye	ELCI2	2-15	5-10	5-10	2-15	50-60	---
Thurber needlegrass	STTH2	2-10	2-5	2-5	2-10	---	---
Mountain brome	BRCA5	---	2-15	2-15	---	---	---
Bottlebrush squirreltail	SIHY	---	2-5	2-5	---	---	---
Nevada bluegrass	PONE3	---	---	---	---	5-15	---
Mat muhly	MURI	---	---	---	---	2-10	---
Sedge	CAREX	---	---	---	---	1-5	---
Tapertip hawksbeard	CRAC2	1-5	2-5	2-5	1-5	---	---
Arrowleaf balsamroot	BASA3	1-5	2-5	2-5	1-5	---	---
Mountain big sagebrush	ARVA2	5-15	5-15	5-15	5-15	---	---
Basin big sagebrush	ARTRT	---	---	---	---	10-15	---
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5	---
Other shrubs	SSSS	---	---	---	---	---	---
Range site number		024X021N	024X029N	024X029N	024X021N	025X003N	None
Potential production (lb/acre):							
Favorable years		1,400	1,500	1,500	1,400	2,500	---
Normal years		1,000	1,100	1,100	1,000	1,900	---
Unfavorable years		700	800	800	700	1,200	---

1340--Laped-Colbar association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Laped	Colbar	1	2	3
Bottlebrush squirreltail	SIHY	5-15	---	5-15	2-10	---
Indian ricegrass	ORHY	5-15	---	5-15	2-10	---
Sandberg bluegrass	POSE	2-5	---	2-5	2-5	---
Needleandthread	STCO4	1-3	---	1-3	---	---
Thurber needlegrass	STTH2	---	20-50	---	2-5	---
Bluebunch wheatgrass	AGSP	---	5-10	---	---	---
Webber ricegrass	STWE	---	---	---	2-10	---
Desert needlegrass	STSP3	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	2-5	---
Balsamroot	BALSA	---	2-4	---	---	---
Tapertip hawksbeard	CRAC2	---	2-4	---	---	---
Eriogonum	ERIOG	---	---	---	1-2	---
Hawksbeard	CREPI	---	---	---	1-2	---
Other perennial forbs	PPFF	2-8	---	2-8	---	---
Shadscale	ATCO	30-40	---	30-40	10-25	---
Bud sagebrush	ARSP5	20-30	---	20-30	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	5-15	---
Winterfat	EULA5	2-5	---	2-5	---	---
Wyoming big sagebrush	ARTRW	---	15-20	---	10-25	---
Downy rabbitbrush	CHVIP	---	2-5	---	2-5	---
Other shrubs	SSSS	---	2-10	---	---	---
Range site number		024X002N	024X005N	024X002N	024X026N	None
Potential production (lb/acre):						
Favorable years		700	800	700	400	---
Normal years		450	600	450	300	---
Unfavorable years		300	400	300	200	---

1350--Burnborough-Cleavage-Reluctan association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Burnborough	Cleavage	Reluctan	1	2	3	4
Idaho fescue	FEID	20-40	25-50	20-40	---	30-60	---	---
Bluebunch wheatgrass	AGSP	20-30	15-30	20-30	X	5-10	---	---
Basin wildrye	ELCI2	2-15	---	2-15	---	---	---	---
Thurber needlegrass	STTH2	2-10	2-10	2-10	X	---	---	---
Spike fescue	LEKI2	---	2-10	---	---	---	---	---
Indian ricegrass	ORHY	---	---	---	X	---	---	---
Bluegrass	POA++	---	---	---	X	---	---	---
Cusick bluegrass	POCU3	---	---	---	---	5-10	---	---
Mountain brome	BRCA5	---	---	---	---	2-5	---	---
Sedge	CAREX	---	---	---	---	2-5	---	5-10
Tufted hairgrass	DECA5	---	---	---	---	---	---	30-60
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-10
Alpine timothy	PHAL2	---	---	---	---	---	---	5-10
Mannagrass	GLYCE	---	---	---	---	---	---	2-5
Meadow barley	HOBR2	---	---	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	---	X	---	---	---
Tapertip hawksbeard	CRAC2	1-5	---	1-5	X	1-3	---	---
Arrowleaf balsamroot	BASA3	1-5	---	1-5	X	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Lupine	LUPIN	---	---	---	---	1-2	---	---
Sierra clover	TRWO	---	---	---	---	---	---	2-5
Cinquefoil	POTEN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	X	---	---	10-20
Mountain big sagebrush	ARVA2	5-15	---	5-15	---	5-15	---	---
Low sagebrush	ARAR8	---	10-20	---	---	---	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---	---	---
Black sagebrush	ARARN	---	---	---	X	---	---	---
Rabbitbrush	CHRYS9	---	---	---	---	---	2-5	---
Rose	ROSA+	---	---	---	---	---	---	1-2
Other shrubs	SSSS	---	---	---	X	---	---	---
Singleleaf pinyon	PIMO	---	---	---	X	---	---	---
Utah juniper	JUOS	---	---	---	X	---	---	---
Range site number		024X021N	024X027N	024X021N	024X051N	024X023N	None	025X005N
Potential production (lb/acre):								
Favorable years		1,400	1,200	1,400	400	1,500	---	2,000
Normal years		1,000	800	1,000	275	1,200	---	1,700
Unfavorable years		700	600	700	150	900	---	1,000

1360--Kram-Hopeka-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Kram	Hopeka	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	X	X	---	5-10	20-50	---
Indian ricegrass	ORHY	X	X	---	---	---	10-15
Thurber needlegrass	STTH2	X	X	---	---	2-5	10-15
Bluegrass	POA++	X	X	---	---	---	2-10
Idaho fescue	FEID	---	---	---	30-60	1-10	---
Cusick bluegrass	POCU3	---	---	---	5-10	---	---
Mountain brome	BRCA5	---	---	---	2-5	2-15	---
Sedge	CAREX	---	---	---	2-5	---	---
Basin wildrye	ELCI2	---	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	---	---	2-5	---
Other perennial grasses	PPGG	X	X	---	---	---	5-20
Arrowleaf balsamroot	BASA3	X	X	---	---	2-5	---
Lupine	LUPIN	---	---	---	1-2	---	---
Globemallow	SPHAE	---	---	---	---	---	2-5
Other perennial forbs	PPFF	X	X	---	---	---	---
Black sagebrush	ARARN	X	X	---	---	---	25-35
Rabbitbrush	CHRYS9	X	X	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	---	5-15	5-15	---
Snowberry	SYMPH	---	---	---	2-5	---	---
Other shrubs	SSSS	X	X		---	---	5-35
Singleleaf pinyon	PIMO	X	X	---	---	---	---
Utah juniper	JUOS	X	X	---	---	---	---
Range site number		O24XO51N	O24XO51N	None	O24XO23N	O24XO29N	O24XO30N
Potential production (lb/acre):							
Favorable years		400	400	---	1,500	1,500	500
Normal years		275	275	---	1,200	1,100	350
Unfavorable years		150	150	---	900	800	250

1390--Mulhop-Xine-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Mulhop	Xine	Rock outcrop	1	2	3
Desert needlegrass	STSP3	X	---	---	---	---	---
Bottlebrush squirreltail	SIHY	X	---	---	---	5-10	---
Indian ricegrass	ORHY	X	---	---	---	---	---
Bluegrass	POA++		---	---	---	---	---
Idaho fescue	FEID	---	20-40	---	30-60	10-20	---
Bluebunch wheatgrass	AGSP	---	20-30	---	5-10	---	---
Basin wildrye	ELCI2	---	2-15	---	---	---	50-60
Thurber needlegrass	STTH2	---	2-10	---	---	---	---
Cusick bluegrass	POCU3	---	---	---	5-10	2-5	---
Mountain brome	BRCA5	---	---	---	2-5	---	---
Sedge	CAREX	---	---	---	2-5	---	1-5
Webber ricegrass	STWE	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	2-5	---
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Other perennial grasses	PPGG	X	---	---	---	---	---
Tapertip hawksbeard	CRAC2	---	1-5	---	1-3	---	---
Arrowleaf balsamroot	BASA3	---	1-5	---	---	---	---
Lupine	LUPIN	---	---	---	1-2	---	2-5
Goldenweed	HAPLO2	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	2-5	---
Other perennial forbs	PPFF	X	---	---	---	---	---
Black sagebrush	ARARN	X	---	---	---	5-15	---
Ephedra	EPHED	X	---	---	---	---	---
Wyoming big sagebrush	ARTRW	X	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	5-15	---	5-15	1-5	---
Snowberry	SYMPH	---	---	---	2-5	---	---
Low sagebrush	ARAR8	---	---	---	---	5-15	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	X	---		---	---	---
Utah juniper	JUOS	X	---	---	---	---	---
Range site number		027X075N	024X021N	None	024X023N	024X016N	025X003N
Potential production (lb/acre):							
Favorable years		500	1,400	---	1,500	350	2,500
Normal years		400	1,000	---	1,200	250	1,900
Unfavorable years		300	700	---	900	150	1,200

1410--Yobe-Bezo-Yobe, occasionally flooded, association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Yobe	Bezo	Yobe, occasionally flooded	1	2	3
Basin wildrye	ELCI2	20-40	5-15	5-15	5-20	15-25	---
Inland saltgrass	DISPS2	---	5-10	5-10	---	---	---
Alkali sacaton	SPAI	---	2-5	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	2-5	---	2-5	5-10	2-5
Indian ricegrass	ORHY	---	---	---	2-5	---	5-10
Thelypody	THELY	---	---	---	2-4	---	---
Other perennial forbs	PPFF	2-8	2-5	T-5	---	5-10	5-10
Torrey quailbush	ATTO	30-50	50-70	---	---	50-60	---
Black greasewood	SAVE4	5-15	5-15	60-75	20-30	5-15	30-40
Basin big sagebrush	ARTRT	2-10	---	---	5-15	---	---
Seepweed	SUAED	---	2-5	---	---	---	---
Iodinebush	ALOC2	---	2-5	---	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	5-10	---	---
Spiny hopsage	GRSP	---	---	---	5-15	---	---
Fourwing saltbush	ATCA2	---	---	---	---	2-5	---
Shadscale	ATCO	---	---	---	---	2-5	10-20
Cooper wolfberry	LYCO2	---	---	---	---	---	5-15
Range site number		O24XO15N	O27XO44N	O24XO11N	O24XO22N	O27XO41N	O27XO36N
Potential production (lb/acre):							
Favorable years		1,500	600	500	800	1,500	200
Normal years		1,200	400	350	600	1,000	100
Unfavorable years		800	200	200	350	600	50

1411--Yobe-Sonoma association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Yobe	Sonoma	1	2	3
Basin wildrye	ELCI2	20-40	2-5	---	---	5-15
Alkali sacaton	SPAI	---	15-40	---	---	---
Alkali muhly	MUAS	---	10-20	---	---	---
Alkali bluegrass	POJU	---	5-15	---	---	---
Inland saltgrass	DISPS2	---	5-10	---	---	5-10
Alkali cordgrass	SPGR	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	5-10	---
Arrowgrass	TRIGL	---	1-3	---	---	---
Other perennial grasses	PPGG	---	---	T-10	T-10	---
Perennial forbs	PPFF	2-8	---	2-8	2-8	T-5
Torrey quailbush	ATTO	30-50	---	---	---	---
Black greasewood	SAVE4	5-15	T-2	15-30	15-30	60-75
Basin big sagebrush	ARTRT	2-10	---	---	---	---
Silver buffaloberry	SHAR	---	T-2	---	---	---
Willow	SALIX	---	T-2	---	---	---
Rubber rabbitbrush	CHNA2	---	T-2	---	---	---
Woods rose	ROWO	---	T-2	---	---	---
Shadscale	ATCO	---	---	30-50	30-50	---
Bud sagebrush	ARSP5	---	---	5-15	5-15	---
Seepweed	SUAED	---	---	2-15	2-15	---
Range site number		024X015N	024X009N	024X003N	024X003N	024X011N
Potential production (lb/acre):						
Favorable years		1,500	1,500	600	600	500
Normal years		1,200	1,000	450	450	350
Unfavorable years		800	700	300	300	200

1412--Yobe silt loam, occasionally flooded

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Yobe	1	2	3	4
Basin wildrye	ELCI2	5-15	---	---	---	5-15
Inland saltgrass	DISPS2	5-10	---	---	---	5-10
Bottlebrush squirreltail	SIHY	---	5-10	5-15	5-15	---
Indian ricegrass	ORHY	---	---	5-15	5-15	---
Sandberg bluegrass	POSE	---	---	2-5	2-5	---
Needleandthread	STCO4	---	---	1-3	1-3	---
Other perennial grasses	PPGG	---	T-10	---	---	---
Perennial forbs	PPFF	T-5	2-8	2-8	2-8	T-5
Black greasewood	SAVE4	60-75	15-30	---	---	60-75
Shadscale	ATCO	---	30-50	30-40	30-40	---
Bud sagebrush	ARSP5	---	5-15	20-30	20-30	---
Seepweed	SUAED	---	2-15	---	---	---
Spiny hopsage	GRSP	---	---	2-5	2-5	---
Winterfat	EULA5	---	---	2-5	2-5	---
Range site number		024X011N	024X003N	024X002N	024X002N	024X011N
Potential production (lb/acre):						
Favorable years		500	600	700	700	500
Normal years		350	450	450	450	350
Unfavorable years		200	300	300	300	200

1420--Goldrun Variant sandy loam, 4 to 15 percent slopes

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Goldrun Variant	1	2
Indian ricegrass	ORHY	5-10	---	---
Bottlebrush squirreltail	SIHY	2-5	2-5	---
Basin wildrye	ELCI2	---	5-15	T-5
Inland saltgrass	DISPS2	---	5-10	T-15
Alkali sacaton	SPAI	---	2-5	40-70
Perennial forbs	PPFF	5-10	2-5	2-8
Black greasewood	SAVE4	30-40	5-15	2-5
Shadscale	ATCO	10-20	---	---
Cooper wolfberry	LYCO2	5-15	---	---
Torrey quailbush	ATTO	---	50-70	---
Seepweed	SUAED	---	2-5	---
Iodinebush	ALOC2	---	2-5	10-20
Sickle saltbush	ATFA	---	---	5-10
Range site number		027X036N	027X044N	024X010N
Potential production (lb/acre):				
Favorable years		200	600	450
Normal years		100	400	300
Unfavorable years		50	200	150

1430--Yobe Variant silty clay

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions		
		Soil name	Inclusion number--	
		Yobe Variant	1	2
Alkali sacaton	SPAI	40-70	2-5	---
Inland saltgrass	DISPS2	T-15	5-10	---
Basin wildrye	ELCI2	T-5	5-15	---
Bottlebrush squirreltail	SIHY	---	2-5	2-5
Indian ricegrass	ORHY	---	---	5-10
Perennial forbs	PPFF	2-8	2-5	5-10
Iodinebush	ALOC2	10-20	2-5	---
Sickle saltbush	ATFA	5-10	---	---
Black greasewood	SAVE4	2-5	5-15	30-40
Torrey quailbush	ATTO	---	50-70	---
Seepweed	SUAED	---	2-5	---
Shadscale	ATCO	---	---	10-20
Cooper wolfberry	LYCO2	---	---	5-15
Range site number		024X010N	027X044N	027X036N
Potential production (lb/acre):				
Favorable years		450	600	200
Normal years		300	400	100
Unfavorable years		150	200	50

1450--Alley-Snowmore-Rock outcrop association

(The letter "T" means trace. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Alley	Snowmore	Rock outcrop	1	2	3	4
Thurber needlegrass	STTH2	20-50	20-50	---	---	5-10	2-10	---
Bluebunch wheatgrass	AGSP	5-10	5-10	---	---	40-60	20-30	---
Bluegrass	POA++	---	---	---	---	2-10	---	---
Basin wildrye	ELCI2	---	---	---	---	2-5	2-15	50-60
Idaho fescue	FEID	---	---	---	---	---	20-40	---
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	---	1-5
Balsamroot	BALSA	2-4	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	2-4	---	---	2-5	1-5	---
Arrowleaf balsamroot	BASA3	---	---	---	---	2-5	1-5	---
Wyoming big sagebrush	ARTRW	15-20	15-20	---	---	5-10	---	---
Downy rabbitbrush	CHVIP	2-5	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	---	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	---	---	T-5	5-15	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	---	---	---	---	---
Range site number		024X005N	024X005N	None	None	024X028N	024X021N	025X003N
Potential production (lb/acre):								
Favorable years		800	800	---	---	1,000	1,400	2,500
Normal years		600	600	---	---	700	1,000	1,900
Unfavorable years		400	400	---	---	500	700	1,200

1480--Tusel-Layview-Rock outcrop association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Tusel	Layview	Rock outcrop	1	2	3	4
Mountain brome	BRCA5	10-15	---	---	---	---	5-10	---
Slender wheatgrass	AGTR	10-15	---	---	---	---	---	---
Idaho fescue	FEID	5-15	25-50	---	10-20	20-40	5-15	---
Bluebunch wheatgrass	AGSP	5-10	15-30	---	---	20-30	5-15	---
Spike fescue	LEKI2	2-15	2-10	---	---	---	---	---
Thurber needlegrass	STTH2	---	2-10	---	---	2-10	---	---
Webber ricegrass	STWE	---	---	---	5-10	---	---	---
Bottlebrush squirreltail	SIHY	---	---	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	---	---	2-5	---	---	---
Sandberg bluegrass	POSE	---	---	---	2-5	---	---	---
Pine bluegrass	POSC	---	---	---	2-5	---	---	---
Basin wildrye	ELCI2	---	---	---	---	2-15	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Geranium	GERAN	2-5	---	---	---	---	---	---
Groundsel	SENEC	2-5	---	---	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---	---	---
Goldenweed	HAPLO2	---	---	---	2-5	---	---	---
Phlox	PHLOX	---	---	---	2-5	---	---	---
Tapertip hawksbeard	CRAC2	---	---	---	---	1-5	---	---
Lupine	LUPIN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	---	---	---	---	5-15	---
Serviceberry	AMELA	5-10	---	---	---	---	5-10	---
Mountain big sagebrush	ARVA2	5-10	---	---	1-5	5-15	5-10	---
Snowberry	SYMPH	2-10	---	---	---	---	2-10	---
Low sagebrush	ARAR8	---	10-20	---	10-20	---	---	---
Black sagebrush	ARARN	---	---	---	5-10	---	---	---
Oceanspray	HOLOD	---	---	---	---	---	5-10	---
Threetip sagebrush	ARTR4	---	---	---	---	---	2-10	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	10-15
Other shrubs	SSSS	---	---	---	---	---	---	---
Range site number		024X032N	024X027N	None	024X016N	024X021N	024X034N	025X003N
Potential production (lb/acre):								
Favorable years		2,200	1,200	---	350	1,400	1,600	2,500
Normal years		1,700	800	---	250	1,000	1,300	1,900
Unfavorable years		1,200	600	---	150	700	800	1,200

1490--Xine-Mulhop-Puffer association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Xine	Mulhop	Puffer	1	2	3	4
Idaho fescue	FEID	20-40	---	---	---	---	20-40	---
Bluebunch wheatgrass	AGSP	20-30	---	---	---	---	10-40	---
Basin wildrye	ELCI2	2-15	---	---	---	---	2-5	50-60
Thurber needlegrass	STTH2	2-10	---	10-15	---	---	5-10	---
Desert needlegrass	STSP3	---	X	---	---	X	---	---
Bottlebrush squirreltail	SIHY	---	X	---	---	X	---	---
Indian ricegrass	ORHY	---	X	10-15	---	X	---	---
Bluegrass	POA++	---	X	2-10	---	X	---	---
Letterman needlegrass	STLE4	---	---	---	---	---	2-5	---
Columbia needlegrass	STNE3	---	---	---	---	---	2-5	---
Cusick bluegrass	POCU3	---	---	---	---	---	2-5	---
Sedge	CAREX	---	---	---	---	---	2-5	1-5
Nevada bluegrass	PONE3	---	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	X	5-20	---	X	---	---
Tapertip hawksbeard	CRAC2	1-5	---	---	---	---	1-4	---
Arrowleaf balsamroot	BASA3	1-5	---	---	---	---	---	---
Globemallow	SPHAE	---	---	2-5	---	---	---	---
Lupine	LUPIN	---	---	---	---	---	---	2-5
Other perennial forbs	PPFF	---	X	---	---	X	---	---
Mountain big sagebrush	ARVA2	5-15	---	---	---	---	---	---
Black sagebrush	ARARN	---	X	25-35	---	X	---	---
Ephedra	EPHED	---	X	---	---	X	---	---
Wyoming big sagebrush	ARTRW	---	X	---	---	X	---	---
Threetip sagebrush	ARTR4	---	---	---	---	---	15-25	---
Rabbitbrush	CHRYS9	---	---	---	---	---	2-5	---
Basin big sagebrush	ARTRT	---	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	2-5
Other shrubs	SSSS	---	X	5-35	---	X	---	---
Utah juniper	JUOS	---	X	---	---	X	---	---
Range site number		024X021N	027X075N	024X030N	None	027X075N	024X046N	025X003N
Potential production (lb/acre):								
Favorable years		1,400	500	500	---	500	1,100	2,500
Normal years		1,000	400	350	---	400	900	1,900
Unfavorable years		700	300	250	---	300	600	1,200

1500--Cortez very fine sandy loam, 2 to 8 percent slopes

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions			
		Soil name	Inclusion number--		
		Cortez	1	2	3
Thurber needlegrass	STTH2	20-50	20-50	20-50	---
Bluebunch wheatgrass	AGSP	5-10	5-10	5-10	---
Basin wildrye	ELCI2	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	5-15
Mat muhly	MURI	---	---	---	2-10
Sedge	CAREX	---	---	---	1-5
Balsamroot	BALSA	2-4	2-4	2-4	---
Tapertip hawksbeard	CRAC2	2-4	2-4	2-4	---
Wyoming big sagebrush	ARTRW	15-20	15-20	15-20	---
Downy rabbitbrush	CHVIP	2-5	2-5	2-5	---
Spiny hopsage	GRSP	2-5	2-5	2-5	---
Basin big sagebrush	ARTRT	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	2-5
Other shrubs	SSSS	2-10	2-10	2-10	---
Range site number		024X005N	024X005N	024X005N	025X003N
Potential production (lb/acre):					
Favorable years		800	800	800	2,500
Normal years		600	600	600	1,900
Unfavorable years		400	400	400	1,200

1501--Cortez-Tenabo-Beoska association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Cortez	Tenabo	Beoska	1	2	3
Thurber needlegrass	STTH2	20-50	---	---	---	10-20	---
Bluebunch wheatgrass	AGSP	5-10	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	5-15	5-15	5-15	2-10	---
Indian ricegrass	ORHY	---	5-15	5-15	5-15	5-15	---
Sandberg bluegrass	POSE	---	2-5	2-5	2-5	2-10	---
Needleandthread	STCO4	---	1-3	1-3	1-3	---	---
Alkali sacaton	SPAI	---	---	---	---	---	15-40
Alkali muhly	MUAS	---	---	---	---	---	10-20
Alkali bluegrass	POJU	---	---	---	---	---	5-15
Inland saltgrass	DISPS2	---	---	---	---	---	5-10
Alkali cordgrass	SPGR	---	---	---	---	---	5-10
Basin wildrye	ELCI2	---	---	---	---	---	2-5
Arrowgrass	TRIGL	---	---	---	---	---	1-3
Balsamroot	BALSA	2-4	---	---	---	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	---	1-2	---
Globemallow	SPHAE	---	---	---	---	1-2	---
Phlox	PHLOX	---	---	---	---	1-2	---
Other perennial forbs	PPFF	---	2-8	2-8	2-8	---	---
Wyoming big sagebrush	ARTRW	15-20	---	---	---	30-35	---
Downy rabbitbrush	CHVIP	2-5	---	---	---	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	5-15	---
Shadscale	ATCO	---	30-40	30-40	30-40	---	---
Bud sagebrush	ARSP5	---	20-30	20-30	20-30	---	---
Winterfat	EULA5	---	2-5	2-5	2-5	---	---
Silver buffaloberry	SHAR	---	---	---	---	---	T-2
Willow	SALIX	---	---	---	---	---	T-2
Rubber rabbitbrush	CHNA2	---	---	---	---	---	T-2
Black greasewood	SAVE4	---	---	---	---	---	T-2
Woods rose	ROWO	---	---	---	---	---	T-2
Other shrubs	SSSS	2-10	---	---	---	---	---
Range site number		024X005N	024X002N	024X002N	024X002N	024X020N	024X009N
Potential production (lb/acre):							
Favorable years		800	700	700	700	700	1,500
Normal years		600	450	450	450	450	1,000
Unfavorable years		400	300	300	300	300	700

1510--Locane-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Locane	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	X	---	---	X	---
Thurber needlegrass	STTH2	X	---	2-5	X	---
Bluegrass	POA++	X	---	---	X	---
Bottlebrush squirreltail	SIHY	---	---	2-10	---	---
Indian ricegrass	ORHY	---	---	2-10	---	---
Webber ricegrass	STWE	---	---	2-10	---	---
Desert needlegrass	STSP3	---	---	2-5	---	---
Sandberg bluegrass	POSE	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	2-5	---	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	X	---	---	X	---
Tapertip hawksbeard	CRAC2	X	---	---	X	---
Arrowleaf balsamroot	BASA3	X	---	---	X	---
Eriogonum	ERIOG	---	---	1-2	---	---
Hawksbeard	CREPI	---	---	1-2	---	---
Lupine	LUPIN	---	---	---	---	2-5
Other perennial forbs	PPFF	X	---	---	X	---
Mountain big sagebrush	ARVA2	X	---	---	X	---
Wyoming big sagebrush	ARTRW	---	---	10-25	---	---
Shadscale	ATCO	---	---	10-25	---	---
Spiny hopsage	GRSP	---	---	5-15	---	---
Bud sagebrush	ARSP5	---	---	2-5	---	---
Downy rabbitbrush	CHVIP	---	---	2-5	---	---
Basin big sagebrush	ARTRT	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	X		---	X	---
Singleleaf pinyon	PIMO	X	---	---	X	---
Utah juniper	JUOS	X	---	---	X	---
Range site number		O24XO49N	None	O24XO26N	O24XO49N	O25XOO3N
Potential production (lb/acre):						
Favorable years		500	---	400	500	2,500
Normal years		350	---	300	350	1,900
Unfavorable years		200	---	200	200	1,200

1530--Polum-Dekoom-Polum Variant association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Polum	Dekoom	Polum Variant	1	2
Mountain brome	BRCA5	10-15	---	---	---	5-10
Slender wheatgrass	AGTR	10-15	---	---	---	2-5
Idaho fescue	FEID	5-15	25-50	10-20	---	5-15
Bluebunch wheatgrass	AGSP	5-10	15-30	---	---	5-15
Spike fescue	LEKI2	2-15	2-10	---	---	---
Bulbous oniongrass	MEBU	2-5	---	---	---	---
Nevada bluegrass	PONE3	2-5	---	---	---	2-5
Thurber needlegrass	STTH2	---	2-10	---	---	---
Webber ricegrass	STWE	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---
Cusick bluegrass	POCU3	---	---	2-5	---	2-5
Sandberg bluegrass	POSE	---	---	2-5	---	---
Pine bluegrass	POSC	---	---	2-5	---	---
Letterman needlegrass	STLE4	---	---	---	---	2-5
Basin wildrye	ELCI2	---	---	---	---	2-5
Geranium	GERAN	2-5	---	---	---	---
Groundsel	SENEC	2-5	---	---	---	---
Lupine	LUPIN	2-5	---	---	---	---
Balsamroot	BALSA	---	2-5	---	---	---
Goldenweed	HAPLO2	---	---	2-5	---	---
Phlox	PHLOX	---	---	2-5	---	---
Other perennial forbs	PPFF	---	---	---	---	5-15
Serviceberry	AMELA	5-10	---	---	---	5-10
Mountain big sagebrush	ARVA2	5-10	---	1-5	---	5-10
Snowberry	SYMPH	2-10	---	---	---	2-10
Low sagebrush	ARAR8	---	10-20	5-15	---	---
Douglas rabbitbrush	CHVI8	---	2-5	---	---	---
Black sagebrush	ARARN	---	---	5-15	---	---
Oceanspray	HOLOD	---	---	---	---	5-10
Threetip sagebrush	ARTR4	---	---	---	---	2-10
Currant	RIBES	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	---	---
Range site number		024X032N	024X027N	024X016N	None	024X034N
Potential production (lb/acre):						
Favorable years		2,200	1,200	350	---	1,600
Normal years		1,700	800	250	---	1,300
Unfavorable years		1,200	600	150	---	800

1540--Dewar-Tenabo-Beoska association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Dewar	Tenabo	Beoska	1	2	3
Thurber needlegrass	STTH2	20-50	---	---	20-50	---	---
Bluebunch wheatgrass	AGSP	5-10	---	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	5-15	5-15	---	5-15	---
Indian ricegrass	ORHY	---	5-15	5-15	---	5-15	---
Sandberg bluegrass	POSE	---	2-5	2-5	---	2-5	---
Needleandthread	STCO4	---	1-3	1-3	---	1-3	---
Basin wildrye	ELCI2	---	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	---	1-5
Balsamroot	BALSA	2-4	---	---	2-4	---	---
Tapertip hawksbeard	CRAC2	2-4	---	---	2-4	---	---
Other perennial forbs	PPFF	---	2-8	2-8	---	2-8	---
Wyoming big sagebrush	ARTRW	15-20	---	---	15-20	---	---
Downy rabbitbrush	CHVIP	2-5	---	---	2-5	---	---
Spiny hopsage	GRSP	2-5	2-5	2-5	2-5	2-5	---
Shadscale	ATCO	---	30-40	30-40	---	30-40	---
Bud sagebrush	ARSP5	---	20-30	20-30	---	20-30	---
Winterfat	EULA5	---	2-5	2-5	---	2-5	---
Basin big sagebrush	ARTRT	---	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	---	2-5
Other shrubs	SSSS	2-10	---	---	2-10	---	---
Range site number		O24XO05N	O24XO02N	O24XO02N	O24XO05N	O24XO02N	O25XO03N
Potential production (lb/acre):							
Favorable years		800	700	700	800	700	2,500
Normal years		600	450	450	600	450	1,900
Unfavorable years		400	300	300	400	300	1,200

1550--Eastwell-Shabliss-Blackhawk association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Eastwell	Shabliss	Blackhawk	1	2	3	4
Indian ricegrass	ORHY	10-15	5-15	2-5	---	2-10	5-15	5-15
Thurber needlegrass	STTH2	10-15	10-20	---	---	2-5	---	10-20
Bluegrass	POA++	2-10	---	---	---	---	---	---
Bottlebrush squirreltail	SIHY	---	2-10	2-10	---	2-10	5-15	2-10
Sandberg bluegrass	POSE	---	2-10	1-3	---	2-5	2-5	2-10
Desert needlegrass	STSP3	---	---	2-10	---	2-5	---	---
Basin wildrye	ELCI2	---	---	---	50-60	---	---	---
Nevada bluegrass	PONE3	---	---	---	5-15	---	---	---
Mat muhly	MURI	---	---	---	2-10	---	---	---
Sedge	CAREX	---	---	---	1-5	---	---	---
Webber ricegrass	STWE	---	---	---	---	2-10	---	---
Pine bluegrass	POSC	---	---	---	---	2-5	---	---
Needleandthread	STCO4	---	---	---	---	---	1-3	---
Other perennial grasses	PPGG	5-20	---	---	---	---	---	---
Globemallow	SPHAE	2-5	1-2	---	---	---	---	1-2
Tapertip hawksbeard	CRAC2	---	1-2	---	---	---	---	1-2
Phlox	PHLOX	---	1-2	---	---	---	---	1-2
Eriogonum	ERIOG	---	---	---	---	1-2	---	---
Hawksbeard	CREPI	---	---	---	---	1-2	---	---
Other perennial forbs	PPFF	---	---	2-8	---	---	2-8	---
Black sagebrush	ARARN	25-35	---	---	---	---	---	---
Wyoming big sagebrush	ARTRW	---	30-35	---	---	10-25	---	30-35
Spiny hopsage	GRSP	---	5-15	---	---	5-15	2-5	5-15
Shadscale	ATCO	---	---	30-50	---	10-25	30-40	---
Bud sagebrush	ARSP5	---	---	15-30	---	2-5	20-30	---
Basin big sagebrush	ARTRT	---	---	---	10-15	---	---	---
Rubber rabbitbrush	CHNA2	---	---	---	2-5	---	---	---
Downy rabbitbrush	CHVIP	---	---	---	---	2-5	---	---
Winterfat	EULA5	---	---	---	---	---	2-5	---
Other shrubs	SSSS	5-35	---	---	---	---	---	---

Range site number	024X030N	024X020N	024X025N	025X003N	024X026N	024X002N	024X020N
Potential production (lb/acre):							
Favorable years	500	700	250	2,500	400	700	700
Normal years	350	450	150	1,900	300	450	450
Unfavorable years	250	300	75	1,200	200	300	300

1551--Eastwell, moderately steep-Shabliss-Eastwell association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Eastwell, moderately steep	Shabliss	Eastwell	1	2
Indian ricegrass	ORHY	10-15	5-15	10-15	---	---
Thurber needlegrass	STTH2	10-15	10-20	10-15	20-50	---
Bluegrass	POA++	2-10	---	2-10	---	---
Bottlebrush squirreltail	SIHY	---	2-10	---	---	---
Sandberg bluegrass	POSE	---	2-10	---	---	---
Bluebunch wheatgrass	AGSP	---	---	---	5-10	---
Basin wildrye	ELCI2	---	---	---	---	50-60
Nevada bluegrass	PONE3	---	---	---	---	5-15
Mat muhly	MURI	---	---	---	---	2-10
Sedge	CAREX	---	---	---	---	1-5
Other perennial grasses	PPGG	5-20	---	5-20	---	---
Globemallow	SPHAE	2-5	1-2	2-5	---	---
Tapertip hawksbeard	CRAC2	---	1-2	---	2-4	---
Phlox	PHLOX	---	1-2	---	---	---
Balsamroot	BALSA	---	---	---	2-4	---
Black sagebrush	ARARN	25-35	---	25-35	---	---
Wyoming big sagebrush	ARTRW	---	30-35	---	15-20	---
Spiny hopsage	GRSP	---	5-15	---	2-5	---
Downy rabbitbrush	CHVIP	---	---	---	2-5	---
Basin big sagebrush	ARTRT	---	---	---	---	10-15
Rubber rabbitbrush	CHNA2	---	---	---	---	2-5
Other shrubs	SSSS	5-35	---	5-35	2-10	---
Range site number		024X030N	024X020N	024X030N	024X005N	025X003N
Potential production (lb/acre):						
Favorable years		500	700	500	800	2,500
Normal years		350	450	350	600	1,900
Unfavorable years		250	300	250	400	1,200

1560--Denay-Wereld-Xine association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Denay	Wereld	Xine	1	2	3	4
Bluebunch wheatgrass	AGSP	20-50	2-10	20-30	---	---	---	10-20
Basin wildrye	ELCI2	5-10	---	2-15	---	---	---	---
Mountain brome	BRCA5	2-15	---	---	---	---	---	---
Thurber needlegrass	STTH2	2-5	---	2-10	---	---	---	10-15
Bottlebrush squirreltail	SIHY	2-5	---	---	X	---	5-10	2-5
Idaho fescue	FEID	2-5	30-60	20-40	---	---	10-20	---
Cusick bluegrass	POCU3	---	5-10	---	---	---	2-5	---
Desert needlegrass	STSP3	---	---	---	X	---	---	---
Indian ricegrass	ORHY	---	---	---	X	---	---	2-5
Bluegrass	POA++	---	---	---	X	---	---	---
Webber ricegrass	STWE	---	---	---	---	---	5-10	---
Sandberg bluegrass	POSE	---	---	---	---	---	2-5	---
Pine bluegrass	POSC	---	---	---	---	---	2-5	5-10
Other perennial grasses	PPGG	---	---	---	X	---	---	---
Tapertip hawksbeard	CRAC2	2-5	2-5	1-5	---	---	---	---
Arrowleaf balsamroot	BASA3	2-5	---	1-5	---	---	---	---
Goldenweed	HAPLO2	---	---	---	---	---	2-5	---
Phlox	PHLOX	---	---	---	---	---	2-5	---
Other perennial forbs	PPFF	---	---	---	X	---	---	10-20
Mountain big sagebrush	ARVA2	5-15	---	5-15	---	---	1-5	5-10
Black sagebrush	ARARN	---	10-20	---	X	---	5-15	---
Ephedra	EPHED	---	---	---	X	---	---	---
Wyoming big sagebrush	ARTRW	---	---	---	X	---	---	---
Low sagebrush	ARAR8	---	---	---	---	---	5-15	---
Snowberry	SYMPH	---	---	---	---	---	---	1-5
Curlleaf mountainmahogany	CELE3	---	---	---	---	---	---	5-10
Other shrubs	SSSS	---	---	---	X	---	---	5-10
Utah juniper	JUOS	---	---	---	X	---	---	---

Range site number	O24XO29N	O24XO42N	O24XO21N	O27XO75N	None	O24XO16N	O28BO42N
Potential production (lb/acre):							
Favorable years	1,500	1,000	1,400	500	---	350	800
Normal years	1,100	800	1,000	400	---	250	600
Unfavorable years	800	500	700	300	---	150	400

1570--Pocker Variant loam, wet

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name	Inclusion number--			
		Pocker Variant	1	2	3	4
Creeping wildrye	ELTR3	15-30	---	---	---	---
Basin wildrye	ELCI2	15-30	X	5-20	---	20-40
Nevada bluegrass	PONE3	5-10	---	---	---	---
Inland saltgrass	DISPS2	5-10	---	---	---	---
Mat muhly	MURI	2-10	---	---	---	---
Nodding bromegrass	BRAN	---	X	---	---	---
Slender wheatgrass	AGTR	---	X	---	---	---
Slender hairgrass	DEEL	---	X	---	---	---
Bottlebrush squirreltail	SIHY	---	---	2-5	2-10	---
Indian ricegrass	ORHY	---	---	2-5	5-10	---
Other perennial grasses	PPGG	---	X	---	---	---
Sierra clover	TRWO	2-5	---	---	---	---
Thelypody	THELY	---	---	2-4	---	---
Other perennial forbs	PPFF	5-10	X	---	2-5	2-8
Willow	SALIX	5-10	---	---	---	---
Basin big sagebrush	ARTRT	2-5	---	5-15	---	2-10
Silver sagebrush	ARCA13	2-5	---	---	---	---
Woods rose	ROWO	---	X	---	---	---
Common chokecherry	PRVI	---	X	---	---	---
Snowberry	SYMPH	---	X	---	---	---
Black greasewood	SAVE4	---	---	20-30	---	5-15
Wyoming big sagebrush	ARTRW	---	---	5-10	---	---
Spiny hopsage	GRSP	---	---	5-15	5-20	---
Littleleaf horsebrush	TEGL	---	---	---	5-25	---
Rubber rabbitbrush	CHNA2	---	---	---	5-20	---
Bailey greasewood	SAVEB	---	---	---	5-20	---
Burrobrush	HYMEN3	---	---	---	5-10	---
Fourwing saltbush	ATCA2	---	---	---	5-10	---
Torrey quailbush	ATTO	---	---	---	---	30-50
Other shrubs	SSSS	---	X	---	---	---
Quaking aspen	POTRT	---	X	---	---	---
Range site number		025X001N	028B025N	024X022N	027X022N	024X015N
Potential production (lb/acre):						
Favorable years		3,000	1,700	800	400	1,500
Normal years		2,500	1,300	600	200	1,200
Unfavorable years		1,800	900	350	50	800

1640--Isolde-Parran-Appian association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Isolde	Parran	Appian	1	2	3	4
Indian ricegrass	ORHY	10-20	---	5-10	---	---	30-50	---
Needleandthread	STCO4	5-10	---	---	---	---	2-10	---
Inland saltgrass	DISPS2	---	5-10	2-5	---	5-10	---	---
Bottlebrush squirreltail	SIHY	---	---	5-10	---	---	---	---
Bluegrass	POA++	---	---	---	---	---	---	10-30
Other perennial grasses	PPGG	2-5	5-15	2-5	---	5-15	2-10	5-15
Perennial forbs	PPFF	2-5	3-7	3-7	---	3-7	2-5	2-5
Black greasewood	SAVE4	10-40	40-60	5-20	---	40-60	---	---
Shadscale	ATCO	---	2-10	20-40	---	2-10	---	20-30
Seepweed	SUAED	---	2-5	5-15	---	2-5	---	---
Bailey greasewood	SAVEB	---	---	2-10	---	---	---	---
Bud sagebrush	ARSP5	---	---	2-10	---	---	---	10-20
Fourwing saltbush	ATCA2	---	---	---	---	---	5-15	---
Winterfat	EULA5	---	---	---	---	---	2-10	---
Nevada dalea	PSPO	---	---	---	---	---	2-10	---
Other shrubs	SSSS	5-20	5-15	---	---	5-15	---	5-10
Range site number		027X016N	027X025N	027X024N	None	027X025N	027X009N	027X028N
Potential production (lb/acre):								
Favorable years		300	400	600	---	400	800	700
Normal years		200	200	400	---	200	450	500
Unfavorable years		50	50	200	---	50	200	300

1650--Bango-Appian association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name		Inclusion number--			
		Bango	Appian	1	2	3	4
Indian ricegrass	ORHY	10-20	10-20	---	---	10-20	5-20
Bottlebrush squirreltail	SIHY	5-10	5-10	---	---	5-10	---
Inland saltgrass	DISPS2	---	---	---	5-10	---	---
Desert needlegrass	STSP3	---	---	---	---	---	2-10
Other perennial grasses	PPGG	---	---	---	5-15	---	2-5
Perennial forbs	PPFF	3-7	3-7	---	3-7	3-7	5-10
Shadscale	ATCO	15-30	15-30	---	2-10	15-30	10-20
Bailey greasewood	SAVEB	5-30	5-30	---	---	5-30	5-15
Bud sagebrush	ARSP5	5-15	5-15	---	---	5-15	2-10
Black greasewood	SAVE4	---	---	---	40-60	---	---
Seepweed	SUAED	---	---	---	2-5	---	---
Nevada ephedra	EPNE	---	---	---	---	---	2-5
Other shrubs	SSSS	---	---	---	5-15	---	5-10
Range site number		O27XO18N	O27XO18N	None	O27XO25N	O27XO18N	O27XO27N
Potential production (lb/acre):							
Favorable years		500	500	---	400	500	200
Normal years		300	300	---	200	300	100
Unfavorable years		100	100	---	50	100	50

1660--Biddleman-Trocken-Biddleman, stony, association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Biddleman	Trocken	Biddleman, stony	1	2	3
Inland saltgrass	DISPS2	5-10	---	---	---	---	---
Bluegrass	POA++	---	10-30	10-30	---	10-30	---
Bottlebrush squirreltail	SIHY	---	---	2-10	2-10	2-10	---
Indian ricegrass	ORHY	---	---	---	5-10	---	---
Other perennial grasses	PPGG	5-15	5-15	---	---	---	---
Perennial forbs	PPFF	3-7	2-5	5-10	2-5	5-10	---
Black greasewood	SAVE4	40-60	---	---	---	---	---
Shadscale	ATCO	2-10	20-30	10-20	---	10-20	---
Seepweed	SUAED	2-5	---	---	---	---	---
Bud sagebrush	ARSP5	---	10-20	5-10	---	5-10	---
Bailey greasewood	SAVEB	---	---	5-10	5-20	5-10	---
Littleleaf horsebrush	TEGL	---	---	---	5-25	---	---
Rubber rabbitbrush	CHNA2	---	---	---	5-20	---	---
Spiny hopsage	GRSP	---	---	---	5-20	---	---
Burrobrush	HYMEN3	---	---	---	5-10	---	---
Fourwing saltbush	ATCA2	---	---	---	5-10	---	---
Other shrubs	SSSS	5-15	5-10	5-15	---	5-15	---
Range site number		027X025N	027X028N	027X030N	027X022N	027X030N	None
Potential production (lb/acre):							
Favorable years		400	700	400	400	400	---
Normal years		200	500	300	200	300	---
Unfavorable years		50	300	200	50	200	---

3000--Jobpeak-Teguro-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Jobpeak	Teguro	Rock outcrop	1	2	3
Bluebunch wheatgrass	AGSP	X	X	---	---	---	X
Thurber needlegrass	STTH2	X	X	---	---	10-20	X
Bluegrass	POA++	X	X	---	---	---	X
Indian ricegrass	ORHY	---	---	---	5-20	---	---
Desert needlegrass	STSP3	---	---	---	2-10	---	---
Basin wildrye	ELCI2	---	---	---	---	5-15	---
Sandberg bluegrass	POSE	---	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	---	---	---	---	2-5	---
Other perennial grasses	PPGG	X	X	---	2-5	2-5	X
Tapertip hawksbeard	CRAC2	X	X	---	---	---	X
Arrowleaf balsamroot	BASA3	X	X	---	---	---	X
Other perennial forbs	PPFF	X	X	---	5-10	2-5	X
Mountain big sagebrush	ARAV2	X	X	---	---	10-20	X
Shadscale	ATCO	---	---	---	10-20	---	---
Bailey greasewood	SAVEB	---	---	---	5-15	---	---
Bud sagebrush	ARSP5	---	---	---	2-10	---	---
Nevada ephedra	EPNE	---	---	---	2-5	---	---
Snowberry	SYMPH	---	---	---	---	5-15	---
Other shrubs	SSSS	X	X		5-10	2-10	X
Singleleaf pinyon	PIMO	X	X	---	---	---	X
Utah juniper	JUOS	X	X	---	---	---	X
Range site number		024X049N	024X049N	None	027X027N	027X058N	024X049N
Potential production (lb/acre):							
Favorable years		500	500	---	200	1,200	500
Normal years		350	350	---	100	1,000	350
Unfavorable years		200	200	---	50	800	200

3010--Bedwyr-Bedzee-Jobpeak association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name			Inclusion number--	
		Bedwyr	Bedzee	Jobpeak	1	2
Bluegrass	POA++	10-30	---	X	---	---
Pine bluegrass	POSC	---	10-20	---	10-20	---
Thurber needlegrass	STTH2	---	5-15	X	5-15	---
Sandberg bluegrass	POSE	---	5-10	---	5-10	---
Bluebunch wheatgrass	AGSP	---	---	X	---	---
Other perennial grasses	PPGG	5-15	5-10	X	5-10	---
Tapertip hawksbeard	CRAC2	---	---	X	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---
Other perennial forbs	PPFF	2-5	5-10	X	5-10	---
Shadscale	ATCO	20-30	---	---	---	---
Bud sagebrush	ARSP5	10-20	---	---	---	---
Sagebrush	ARTEM	---	25-35	---	25-35	---
Mountain big sagebrush	ARVA2	---	---	X	---	---
Other shrubs	SSSS	5-10	5-10	X	5-10	---
Singleleaf pinyon	PIMO	---	---	X	---	---
Utah juniper	JUOS	---	---	X	---	---
Range site number		027X028N	027X020N	024X049N	027X020N	None
Potential production (lb/acre):						
Favorable years		700	400	500	400	---
Normal years		500	200	350	200	---
Unfavorable years		300	100	200	100	---

3020--Uripnes-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Uripnes	Rock outcrop	1	2	3
Desert needlegrass	STSP3	20-30	---	---	---	---
Indian ricegrass	ORHY	5-10	---	---	---	---
Sandberg bluegrass	POSE	2-5	---	---	---	2-5
Bottlebrush squirreltail	SIHY	2-5	---	---	---	---
Bluebunch wheatgrass	AGSP	---	---	X	---	---
Thurber needlegrass	STTH2	---	---	X	5-10	---
Bluegrass	POA++	---	---	X	---	---
Pine bluegrass	POSC	---	---	---	20-30	---
Basin wildrye	ELCI2	---	---	---	---	2-5
Other perennial grasses	PPGG	---	---	X	5-15	10-25
Tapertip hawksbeard	CRAC2	---	---	X	---	---
Arrowleaf balsamroot	BASA3	---	---	X	---	---
Other perennial forbs	PPFF	5-10	---	X	5-10	2-5
Littleleaf horsebrush	TEGL	10-20	---	---	---	---
Shadscale	ATCO	5-15	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	X	---	---
Wyoming big sagebrush	ARTRW	---	---	---	10-20	5-15
Spiny hopsage	GRSP	---	---	---	5-15	10-20
Nevada ephedra	EPNE	---	---	---	5-10	---
Basin big sagebrush	ARTRT	---	---	---	---	5-15
Rabbitbrush	CHRYS9	---	---	---	---	10-30
Other shrubs	SSSS	5-15	---	X	5-10	---
Singleleaf pinyon	PIMO	---	---	X	---	---
Utah juniper	JUOS	---	---	X	---	---
Range site number		O27XO17N	None	O24XO49N	O27XOO7N	O27XO29N
Potential production (lb/acre):						
Favorable years		400	---	500	600	800
Normal years		200	---	350	450	500
Unfavorable years		100	---	200	300	100

3030--Singatse, very steep-Rock outcrop-Singatse association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions						
		Soil name			Inclusion number--			
		Singatse, very steep	Rock outcrop	Singatse	1	2	3	4
Indian ricegrass	ORHY	5-20	---	5-20	---	2-10	---	5-10
Desert needlegrass	STSP3	2-10	---	2-10	---	5-15	---	---
Bluebunch wheatgrass	AGSP	---	---	---	X	---	---	---
Thurber needlegrass	STTH2	---	---	---	X	---	5-15	---
Bluegrass	POA++	---	---	---	X	---	---	---
Galleta	HIJA	---	---	---	---	5-15	---	---
Bottlebrush squirreltail	SIHY	---	---	---	---	2-10	---	2-10
Pine bluegrass	POSC	---	---	---	---	---	10-20	---
Sandberg bluegrass	POSE	---	---	---	---	---	5-10	---
Other perennial grasses	PPGG	2-5	---	2-5	X	---	5-10	---
Tapertip hawksbeard	CRAC2	---	---	---	X	---	---	---
Arrowleaf balsamroot	BASA3	---	---	---	X	---	---	---
Other perennial forbs	PPFF	5-10	---	5-10	X	5-10	5-10	2-5
Shadscale	ATCO	10-20	---	10-20	---	10-20	---	---
Bailey greasewood	SAVEB	5-15	---	5-15	---	5-10	---	5-20
Bud sagebrush	ARSP5	2-10	---	2-10	---	5-10	---	---
Nevada ephedra	EPNE	2-5	---	2-5	---	---	---	---
Mountain big sagebrush	ARVA2	---	---	---	X	---	---	---
Winterfat	EULA5	---	---	---	---	2-5	---	---
Low sagebrush	ARAR8	---	---	---	---	---	25-35	---
Littleleaf horsebrush	TEGL	---	---	---	---	---	---	5-25
Rubber rabbitbrush	CHNA2	---	---	---	---	---	---	5-20
Spiny hopsage	GRSP	---	---	---	---	---	---	5-20
Burrobrush	HYMEN3	---	---	---	---	---	---	5-10
Fourwing saltbush	ATCA2	---	---	---	---	---	---	5-10
Other shrubs	SSSS	5-10		5-10	X	---	5-10	---
Singleleaf pinyon	PIMO	---	---	---	X	---	---	---
Utah juniper	JUOS	---	---	---	X	---	---	---
Range site number		027X027N	None	027X027N	024X049N	027X019N	027X020N	027X022N
Potential production (lb/acre):								
Favorable years		200	---	200	500	350	400	400
Normal years		100	---	100	350	200	200	200
Unfavorable years		50	---	50	200	50	100	50

3031--Singatse-Jobpeak-Rock outcrop association

(An X indicates that the named plant is in the potential native woodland understory and the percentage is highly variable. Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Singatse	Jobpeak	Rock outcrop	1	2	3
Indian ricegrass	ORHY	5-20	---	---	---	---	5-10
Desert needlegrass	STSP3	2-10	---	---	---	---	20-30
Bluebunch wheatgrass	AGSP	---	X	---	X	---	---
Thurber needlegrass	STTH2	---	X	---	X	5-15	---
Bluegrass	POA++	---	X	---	X	---	---
Pine bluegrass	POSC	---	---	---	---	10-20	---
Sandberg bluegrass	POSE	---	---	---	---	5-10	2-5
Bottlebrush squirreltail	SIHY	---	---	---	---	---	2-5
Other perennial grasses	PPGG	2-5	X	---	X	5-10	---
Tapertip hawksbeard	CRAC2	---	X	---	X	---	---
Arrowleaf balsamroot	BASA3	---	X	---	X	---	---
Other perennial forbs	PPFF	5-10	X	---	X	5-10	5-10
Shadscale	ATCO	10-20	---	---	---	---	5-15
Bailey greasewood	SAVEB	5-15	---	---	---	---	---
Bud sagebrush	ARSP5	2-10	---	---	---	---	---
Nevada ephedra	EPNE	2-5	---		---	---	---
Mountain big sagebrush	ARVA2	---	X	---	X	---	---
Low sagebrush	ARAR8	---	---	---	---	25-35	---
Littleleaf horsebrush	TEGL	---	---	---	---	---	10-20
Other shrubs	SSSS	5-10	X	---	X	5-10	5-15
Singleleaf pinyon	PIMO	---	X	---	X	---	---
Utah juniper	JUOS	---	X	---	X	---	---
Range site number		027X027N	024X049N	None	024X049N	027X020N	027X017N
Potential production (lb/acre):							
Favorable years		200	500	500	400	400	
Normal years		100	350	350	200	200	
Unfavorable years		50	200	200	100	100	

3040--Madaline-Millerlux association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions				
		Soil name		Inclusion number--		
		Madeline	Millerlux	1	2	3
Thurber needlegrass	STTH2	10-20	---	---	---	---
Basin wildrye	ELCI2	5-15	---	---	5-10	---
Sandberg bluegrass	POSE	5-10	2-5	---	---	---
Bottlebrush squirreltail	SIHY	2-5	5-10	---	---	---
Idaho fescue	FEID	---	10-20	---	---	---
Webber ricegrass	STWE	---	5-10	---	---	---
Cusick bluegrass	POCU3	---	2-5	---	---	---
Pine bluegrass	POSC	---	2-5	---	---	---
Western needlegrass	STOC2	---	---	---	30-40	---
Columbia needlegrass	STNE3	---	---	---	5-10	---
Spike fescue	LEKI2	---	---	---	5-10	---
Tufted hairgrass	DECA5	---	---	---	---	20-40
Sedge	CAREX	---	---	---	---	15-30
Rush	JUNCU	---	---	---	---	10-20
Nevada bluegrass	PONE3	---	---	---	---	10-15
Other perennial grasses	PPGG	2-5	---	---	---	---
Goldenweed	HAPLO2	---	2-5	---	---	---
Phlox	PHLOX	---	2-5	---	---	---
Other perennial forbs	PPFF	2-5	---	---	10-20	5-10
Mountain big sagebrush	ARVA2	10-20	1-5	---	15-20	---
Snowberry	SYMPH	5-15	---	---	---	---
Low sagebrush	ARAR8	---	5-15	---	---	---
Black sagebrush	ARARN	---	5-15	---	---	---
Other shrubs	SSSS	2-10	---		---	---
Range site number		027X058N	024X016N	None	026X038N	027X004N
Potential production (lb/acre):						
Favorable years		1,200	350	---	1,500	2,500
Normal years		1,000	250	---	1,200	1,500
Unfavorable years		800	150	---	800	1,000

3050--Millerlux-Ninemile-Madeline association

(Absence of an entry indicates that the named plant is not a key species in the potential native plant community)

Common plant name	Plant symbol	Percentage composition and production (dry weight) of plants on major soils and inclusions					
		Soil name			Inclusion number--		
		Millerlux	Ninemile	Madeline	1	2	3
Idaho fescue	FEID	10-20	5-15	---	---	10-20	---
Webber ricegrass	STWE	5-10	---	---	---	5-10	---
Bottlebrush squirreltail	SIHY	5-10	2-5	2-5	---	5-10	---
Cusick bluegrass	POCU3	2-5	---	---	---	2-5	---
Sandberg bluegrass	POSE	2-5	---	5-10	---	2-5	---
Pine bluegrass	POSC	2-5	---	---	---	2-5	---
Bluegrass	POA++	---	10-30	---	---	---	---
Thurber needlegrass	STTH2	---	5-10	10-20	---	---	---
Basin wildrye	ELCI2	---	---	5-15	---	---	5-10
Western needlegrass	STOC2	---	---	---	---	---	30-40
Columbia needlegrass	STNE3	---	---	---	---	---	5-10
Spike fescue	LEKI2	---	---	---	---	---	5-10
Other perennial grasses	PPGG	---	---	2-5	---	---	---
Goldenweed	HAPLO2	2-5	---	---	---	2-5	---
Phlox	PHLOX	2-5	5-10	---	---	2-5	---
Eriogonum	ERIOG	---	2-5	---	---	---	---
Other perennial forbs	PPFF	---	---	2-5	---	---	10-20
Low sagebrush	ARAR8	5-15	10-20	---	---	5-15	---
Black sagebrush	ARARN	5-15	2-5	---	---	5-15	---
Mountain big sagebrush	ARVA2	1-5	---	10-20	---	1-5	15-20
Snowberry	SYMPH	---	---	5-15	---	---	---
Other shrubs	SSSS	---	5-10	2-10	---	---	---
Range site number		024X016N	027X046N	027X058N	None	024X016N	026X038N
Potential production (lb/acre):							
Favorable years		350	600	1,200	---	350	1,500
Normal years		250	400	1,000	---	250	1,200
Unfavorable years		150	300	800	---	150	800

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