



**United States  
Department of  
Agriculture**

Forest Service

Pacific  
Southwest  
Region

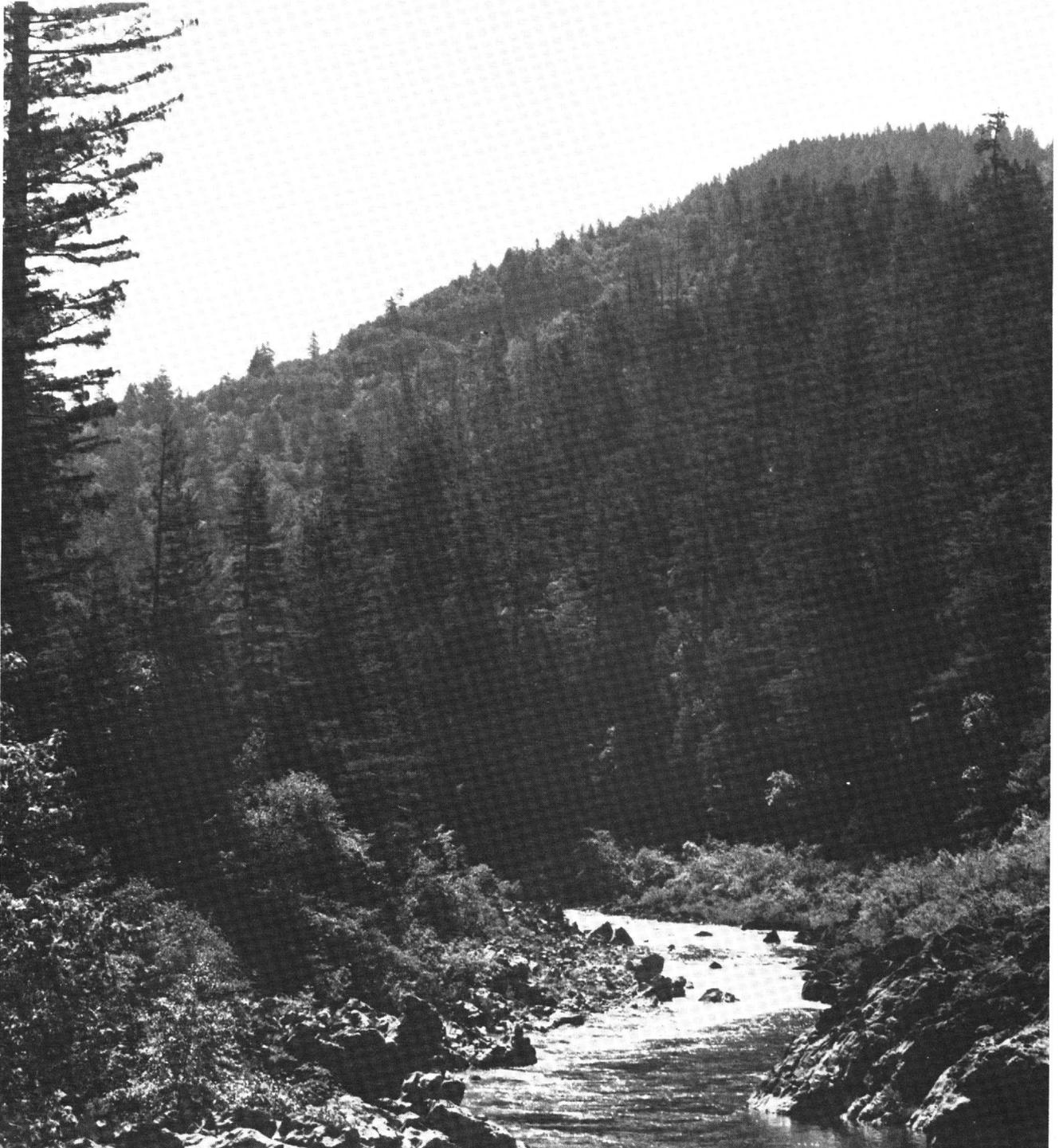
In cooperation with:

U.S.D.A. Soil  
Conservation Service

Regents of the  
University of California  
(Agricultural Experiment  
Station)

# **Soil Survey**

## **Six Rivers National Forest, California**



# How To Use This Soil Survey

## General Soil Map

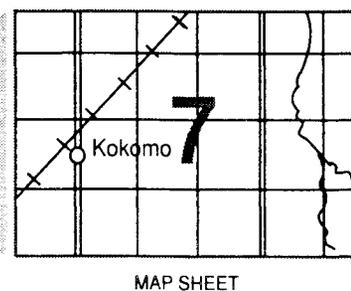
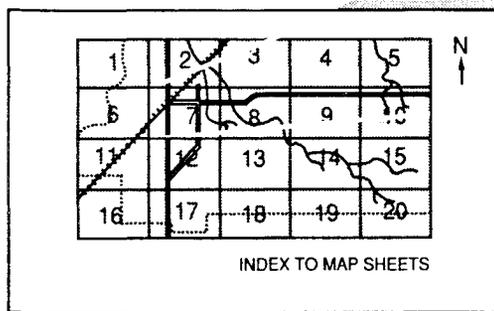
The general soil map, which is the small scale map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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 map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

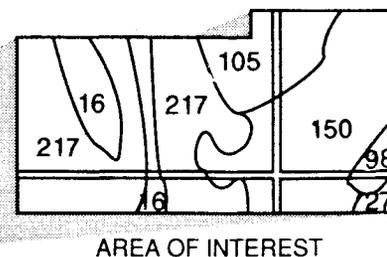
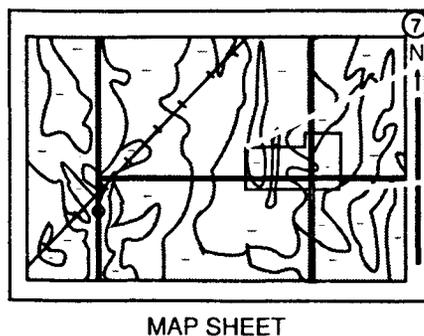
## Detailed Soil Maps

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.

## Six Rivers National Forest Area, California

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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, and state agencies including the The Regents of the University of California (Agricultural Experiment Station). The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. The fieldwork and technical quality control for this survey were conducted by the Forest Service. The correlation of the soils was conducted by the Soil Conservation Service in consultation with the Forest Service. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in 1979. Soil names and descriptions were approved in 1984. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1979. This survey was made cooperatively by the Soil Conservation Service and the Forest Service. The soil survey area consists of the Six Rivers National Forest.

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

Cover: This is a view of the Smith River on the Gasquet Ranger District.

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## Foreward

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Soil Survey of Six Rivers National Forest Area, California, in parts of Humboldt, Del Norte, Siskiyou, and Trinity Counties, was designed to facilitate broad Forest-wide resource management planning and to increase the knowledge of our environment. It contains predictions of soil behavior for selected uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil.

This soil survey has been prepared primarily for Forest Resource Planners and Managers. It is useful for preliminary project planning, for identifying general soil management considerations and for evaluation of more intensive soil survey needs. The mapping scale does not provide sufficient detail for site-specific project planning without further field investigation.

Each kind of soil, with its associated properties, is described in this report. Soil map units are also described and are shown on detailed soil maps in the back of the report. Broad areas of soils are shown on the general soil maps for regional or state-wide use.

This soil survey can be useful in the conservation, improvement and productive use of soils and other resources.



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# Location Map Six Rivers National Forest California



# Soil Survey of Six Rivers National Forest Area, California

Parts of Del Norte, Humboldt, Siskiyou and Trinity Counties

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Earth Environmental Consultants, Inc.: Dean L. Stoneman, T. Scott Gibson and Dellon N. Cox

United States Department of Agriculture, Forest Service in cooperation with United States Department of Agriculture, Soil Conservation Service and The Regents of the University of California (Agricultural Experiment Station)

## Introduction and Acknowledgements

### How This Survey Was Made

This Order 3 soil survey has followed the directives and guidelines in the Forest Service Manual and Handbooks. It has also followed the concepts, procedures, and guidelines of the National Cooperative Soil Survey as specified in the Soil Survey Manual (13), the National Soils Handbook (15), and the soil classification system as stated in Soil Taxonomy (14).

Soil scientists begin the inventory by collecting, studying, and correlating all the existing data and information concerning the survey area (National Forest) that is related to soil genesis and morphology. This includes lithological, geomorphological, topographical, climatic, vegetative, and existing soil survey data both within and adjoining the survey area.

This data and information was assimilated and trans-

ferred to a single base map of suitable scale and accuracy forming the beginning soil map unit delineations or a schematic map. With the schematic map and aerial photo field sheets (stereo-pair coverage) in hand, the soil scientist made a reconnaissance study of the survey area. At this time, the delineations on the schematic map were checked for accuracy of content and location. The aerial photos were studied stereoscopically and the photo images were compared to the conditions found on the ground to insure that later recognition by photo interpretation would be credible. Lithologic, geomorphic, soil, and vegetative characteristics were recognized and recorded in field notes, on the schematic map, and on aerial photo field sheets.

Using the augmented and corrected schematic map, field notes, and an understanding of how the photo images relate to actual conditions on the ground, the soil scientist delineated map units on the aerial photographs. The map units corresponded to segments of the landscapes having similar landform, vegetative cover, and soils as

determined by a knowledge of ground conditions and by stereoscopic aerial interpretation. These aerial photos with the delineation symbols become the exploratory or preliminary soils map.

With the aerial photo (exploratory soils maps) and a field stereoscope, the soil scientist examined on-the-ground as many delineations of each map unit as was possible, considering the access and time allowed to complete the survey. In this way, each different map unit was examined, studied, and described by aerial photo interpretations and on-the-ground investigation. However, because of the design of the survey, Order 3 in intensity, and the time allotted for its completion, every delineation of each different map unit was not visited and examined on the ground. Those delineations with no easy access were rarely visited other than by aerial photo interpretation. In this way, possibly one-third to one-half of the delineations on the field sheets and maps would not have been entered and examined by an on-the-ground investigation. ***This is one of the main aspects of this survey that limits its reliability. It is one reason that the survey is unsuitable for project planning without field verification.***

As each map unit was visited and examined, individual soils were recognized, studied, described, classified, and enough data was collected to furnish the information needed to make interpretations and predictions concerning the use and management of each soil. ***However, the exact location of each soil was not delineated.*** The map units usually consist of a group of soils that occupy a particular portion of the landscape which has been delineated on the aerial photo field sheets. Depending on the area location and extent of the individual soils that are components of the delineated map unit, a map unit is called a consociation, association or complex of soil components. The soil scientist makes a field and aerial photo examination to estimate the soil component percentage composition of each map unit. These map units do not necessarily consist of similar soils. They consist of geographically associated soils that may be, and usually are, quite different in their characteristics and their suitability for use and management. ***These are other aspects of the survey that limit its reliability and make it unsuitable for project planning without field verification.***

This field examination and study, and the associated correction and refinement of the aerial photo field sheets, produces the Order 3 intensity soil maps called for in this system of survey.

The interpretations and predictions concerning use and

management found in this report are based on the soil scientist's knowledge and understanding of the conditions recognized and measured in the time allotted to this inventory. By classifying the soils, the soil scientist can also, with acceptable reliability, bring information concerning use and management of a particular soil from other survey areas where this same soil occurs and has been recognized and studied. Because of the time allocation for the completion of this survey, these use and management interpretations and predictions should be considered as first or second approximations due to the relatively few examinations and measurements that have been made. ***This is still another aspect of the survey that limits its reliability and makes it unsuitable for project planning without field verification.***

Despite the cautions that have been made in the above paragraphs concerning the use of this survey information for project level planning, it is adequate and reliable for its intended and designed purpose: a base for a forest-wide system of land management planning.

### Chronology of Mapping

The original draft of this report was prepared by Soil and Land Use Technology, Inc., under contract number 53-9A47-62 in the period from October through December, 1979. The work was done primarily by Annette M. Parsons, SaLUT Soil Scientist, and by Dr. Ellis G. Knox, SaLUT Executive Officer, under the direction of Scott R. Miles, Forest Service Soil Scientist. Dr. Joel A. Norgren, SaLUT Soil Scientist, prepared the general soil map and provided other technical assistance. Marjorie Rodgers typed the manuscript and performed other secretarial, clerical, and drafting services.

The original draft report was revised twice. The first revision was in May, 1981, by Scott Miles, following the final field review (held March 30-April 3 1981). A second revision was made in December, 1984, by Brent Roath, following the final correlation by the West Technical Service Center, Soil Conservation Service.

This report combines, integrates, and supplements the information presented in the interim reports of eight soil surveys on the Forest, carried out according to the procedure and standards of the Forest Service and the Soil Conservation Service as part of the National Cooperative Soil Survey. The work has been reviewed and correlated by the Soil Conservation Service.

The previous studies are as follows.

**1. Orleans Soil Survey, Interim Report.**

This work was done in 1961-1963 and covered about 171,000 acres on the Orleans Ranger District. Field work was done by R.E. Rocky and G.L. Anderson of the U.S. Forest Service. Classification and Correlation assistance was provided by K.E. Bradshaw and A.E. Sherrell of the Forest Service, and by R.C. Huff and S.B. Johnson of the Soil Conservation Service. The report was written by R.E. Rocky, K.E. Bradshaw, and A.G. Sherrell.

**2. Soil Resource Inventory, Tish Tang Planning Unit, Lower Trinity Ranger District, Six Rivers National Forest.**

This survey was done in 1975 and covered approximately 94,000 acres on the Lower Trinity Ranger District. John A. Nesser, Forest Service Soil Scientist, conducted field work and wrote the report, under the supervision of Ken Lanspa, Forest Service Soil Scientist. Forest Service Regional Soil Scientists and the Soil Conservation Service provided classification and correlation assistance.

**3. Soil Resource Inventory, Lower Trinity Ranger District, Southern Portion, Six Rivers National Forest.**

This survey was done in 1978 and covered about 140,000 acres on the Lower Trinity Ranger District. Field work and report writing were accomplished by Forest Service Soil Scientists Judith L. Weiss, party leader, and Annette M. Parsons, under the supervision of Scott R. Miles, Forest Service Soil Scientist. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

**4. Interim Soil Survey, Information on 39,000 Acres, Mad River Ranger District, Six Rivers National Forest.**

This work was done in 1977-1978 and covered about 39,000 acres on the Mad River Ranger District. The work, which was done under contract by Earth Environmental Consultants, Inc., consisted of mapping only, and no management interpretations were made. Dean L. Stoneman, EEC president, T. Scott Gibson and Dellon N. Cox, EEC Soil Scientists, accomplished the mapping and the preparation of the report. Scott R. Miles (U.S.F.S.) was the Contracting Officer's Representative. Classification and correlation assistance was provided by Forest Service Regional Scientists.

**5. Soil Resource Inventory, Interim Report, Gasquet Ranger District, Northern Portion, Six Rivers National Forest.**

This work was done in 1978 and covered approximately 130,000 acres on the Gasquet Ranger District. Judith L. Weiss, party leader, and Annette M. Parsons (U.S.F.S.) conducted the field work and report writing, under the supervision of Scott R. Miles (U.S.F.S.). Field aids also participating were Jack Hubbard, Terry Kramer, Mike Prieto, and Diane Reilly, who were enrollees in the Young Adult Conservation Corps program. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

**6. Soil Resource Inventory, Mad River Ranger District, Six Rivers National Forest.**

This survey was conducted in 1978-1979 and covered nearly 250,000 acres on the Mad River Ranger District. The work was done under contract by Soil and Land Use Technology, Inc. Dr Joel A. Norgren, party leader, Annette M. Parsons, and William E. Perkis, SaLUT Soil Scientists, conducted the field work and report writing under the general direction of Dr. Ellis G. Knox, project director. Scott R. Miles (U.S.F.S.) was the Contracting Officer's Representative. Judith L. Weiss (U.S.F.S.) also participated. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

**7. Soil Resource Inventory, Gasquet and Orleans Ranger Districts, Six Rivers National Forest.**

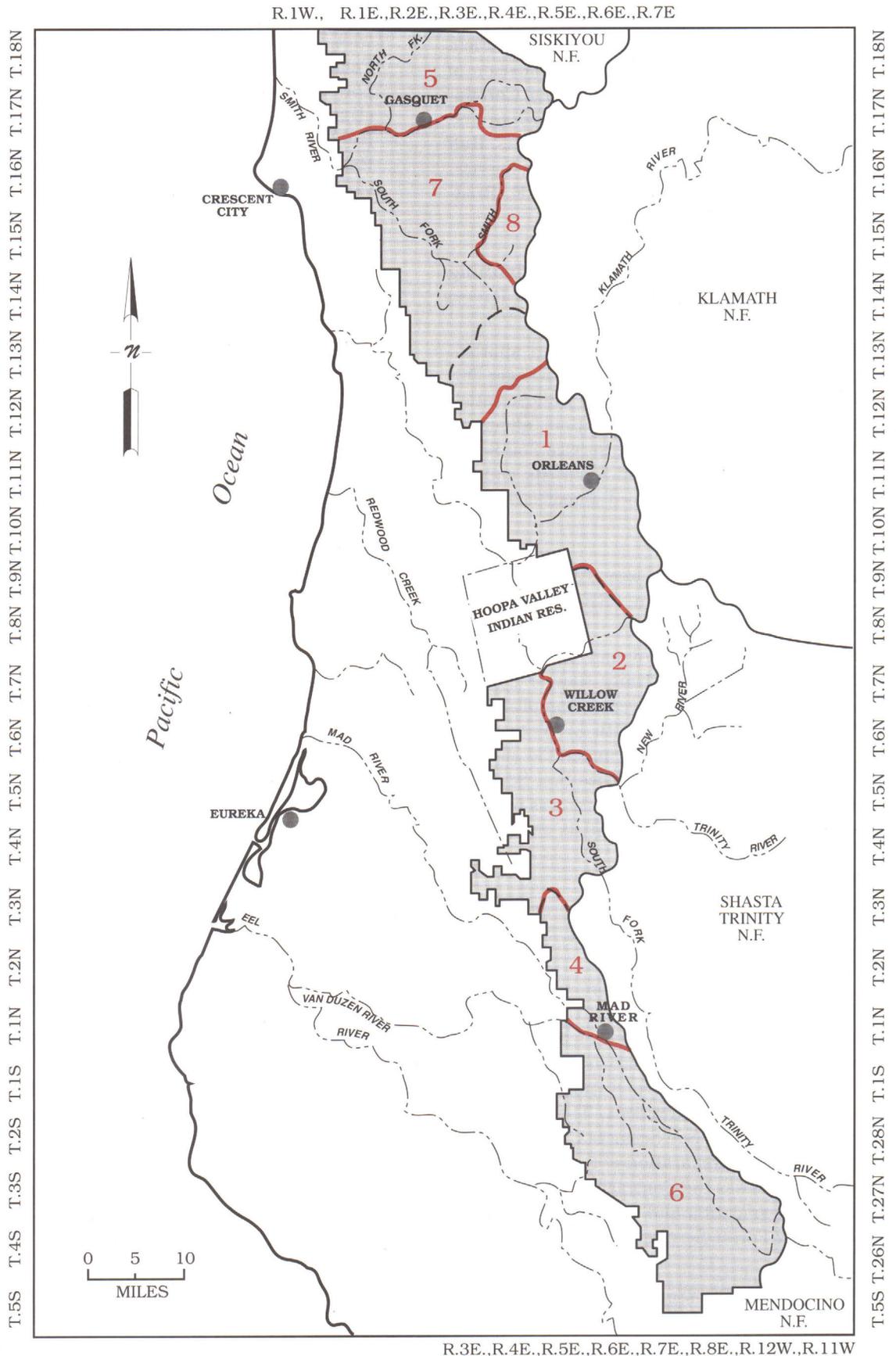
This work was done in 1979 and covered approximately 250,000 acres on the Gasquet and Orleans Ranger Districts. The work was done under contract by Soil and Land Use Technology, Inc. Field work was accomplished by Dr. Joel A. Norgren, party leader, Annette M. Parsons, and William E. Perkis, SaLUT Soil Scientists. The report was compiled by Annette M. Parsons. Scott R. Miles was the Contracting Officer's Representative. Classification and correlation assistance was provided by Forest Service Regional Soil Scientists and the Soil Conservation Service.

**8. Proposed Siskiyou Wilderness Area, Gasquet Ranger District.**

After completion of the previous studies, the mapping was extended into the proposed Siskiyou Wilderness Area by interpretation of stereoscopic aerial photographs. This area totaled about 26,000 acres and completed the soil resource inventory of the Six Rivers National Forest. The work was done by Dr. Joel A. Norgren, SaLUT Soil Scientist.

The location and extent of these eight projects are shown in Figure 1. The numbers on the map correspond to the eight areas described above.

Figure 1. Soil Survey Project Areas, Six Rivers National Forest



R.3E., R.4E., R.5E., R.6E., R.7E., R.8E., R.12W., R.11W

## Survey Area

### General Nature

Survey area 701 is the Six Rivers National Forest located in northwestern California. It is in Humboldt, Del Norte, Trinity, and Siskiyou Counties in the northern California coast range and extends southward from the Oregon border (42 degrees north latitude) about 136 miles almost to 40 degrees north latitude. The Forest ranges from 3 to 20 miles in width from east to west. It is bounded by the Klamath, Shasta-Trinity, and Mendocino National Forests on the east and by private land and the Hoopa Valley Indian Reservation on the west. The Forest is crossed by U.S. Highway 199 and California Highways 96, 299, and 36.

The area of the Forest within the administrative boundary is 1,105,243 acres; 980,285 acres are Forest Service and the rest are privately owned. The Forest consists of four Ranger Districts: Gasquet, Orleans, Lower Trinity, and Mad River. Forest headquarters are in Eureka, California.

### Climate

The area of the Six Rivers National Forest has a mediterranean climate with cool, moist winters and warm dry summers. Average January temperature on the Forest ranges from 28 to 40° F, and average July temperature ranges from 64 to 80° F (Oakshott, 1978), with the inland areas of the Forest reaching the extremes of high and low temperatures.

Precipitation is moderately heavy over most of the Forest. It ranges from around 50 to 60 inches on the Mad River and Lower Trinity Ranger Districts, to 100 to over 120 inches in parts of the Orleans and Gasquet Ranger Districts (Figure 2). Roughly 80 percent of the total precipitation falls in the six month period between November and April. Most of the precipitation is from widespread storms of several days duration and relatively moderate intensity. Snow occurs in moderate amounts at elevations of 2,000 feet and up, but only above 4,000 feet does snow remain on the ground for very long. Coastal fog is a significant moisture factor in the westernmost part of the Gasquet Ranger District.

### Geomorphology

The Forest is located in parts of the Klamath Mountains and California Coast Ranges Geomorphic Provinces. The general trend of ranges, rock formations, and structures in the Klamath Mountain Province is north-south. The South Fork Mountains, the Trinity Alps, the Salmon

Mountains and the Siskiyou Mountains are individual ranges within this province that occur on or adjacent to the Forest. These mountains have been uplifted relatively rapidly and then deeply dissected, accounting for the ruggedness of the terrain. The higher parts of the mountains have been glaciated.

The California Coast Ranges trend north-northwesterly, roughly parallel to the Sierra Nevadas. The Coast Ranges are dominated by lower, more rounded peaks than the Klamath Mountains, and drainage systems are generally smaller. The Coast Ranges consist of a complex series of small, independent ranges and valleys (Oakshott, 1978).

The lowest elevation on the Six Rivers National Forest is about 400 feet in the Trinity River drainage, on the Lower Trinity Ranger District. It reaches just over 6,500 feet on Bear Mountain in the Siskiyou Mountains of the Gasquet Ranger District.

Topography throughout the Forest is dominated by steep, dissected, timbered mountain slopes ranging between 30 to 80 percent. These are the major timber producing areas. Relatively inextensive areas of flat valley bottoms occur in the flood plains of the larger drainage systems. These areas are agricultural.

The six principal drainage systems on the Six Rivers National Forest, for which the Forest is named are the Eel, Van Duzen, Mad, Trinity, Klamath, and Smith Rivers.

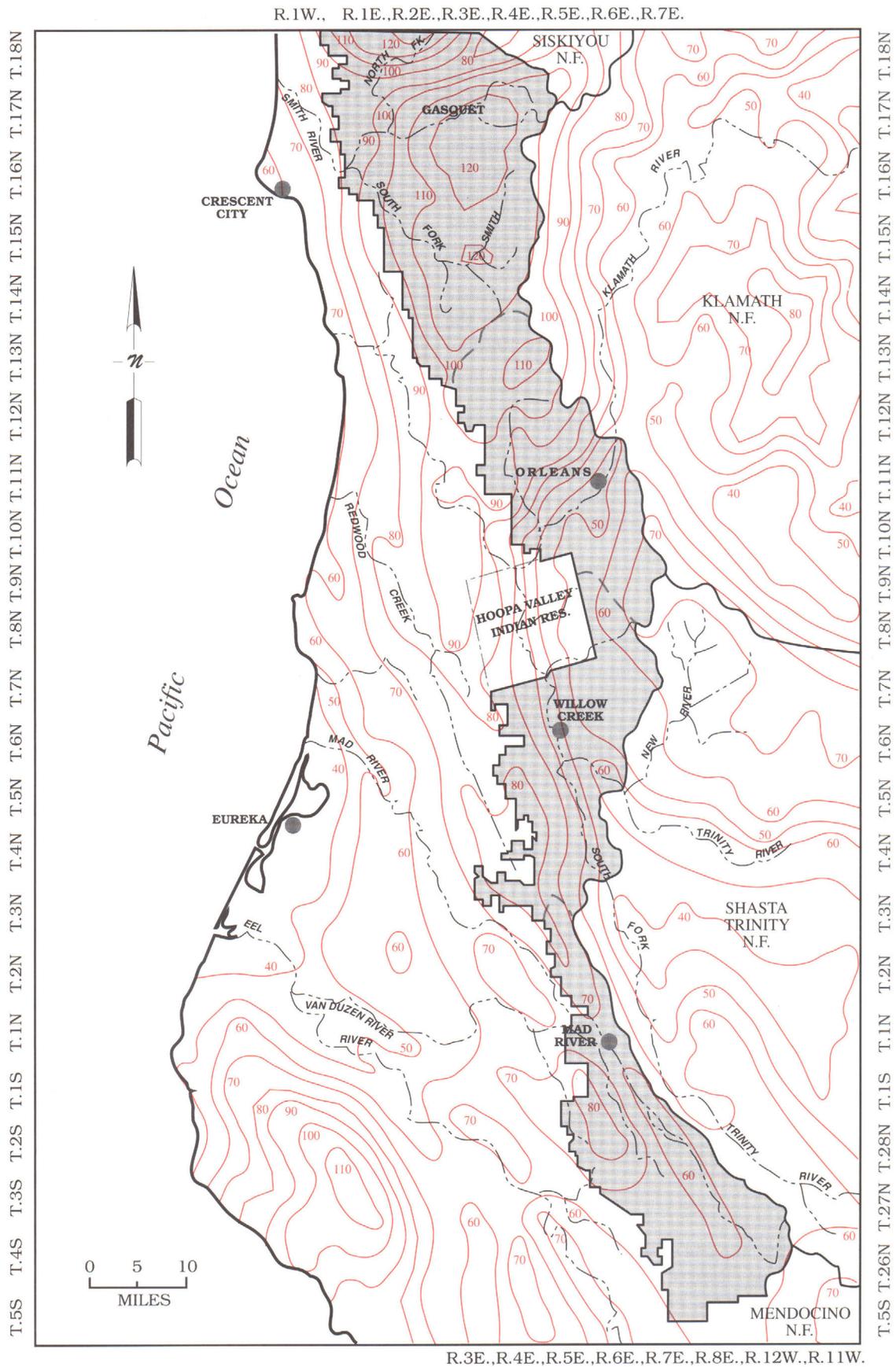
### Geology

The rock types occurring on the Forest can be categorized into four major soil-forming groups: (1) Sedimentary and metasedimentary rocks; (2) Metaigneous (or Metavolcanic) rocks; (3) Ultrabasic (or Ultramafic) intrusive rocks; and (4) Igneous rocks. The igneous rocks are dominantly acid igneous, but small areas of basic igneous rocks do occur.

The sediments and metasediments are predominantly the Late Jurassic graywacke, shale, schist, and chert of the Franciscan and Dothan Formations, the Upper Jurassic slate, phyllite, and sandstone of the Galice Formation, and Pre-Cretaceous quartzite, metachert, mica schist, and phyllite.

The metaigneous (or metavolcanic) rocks are mainly Late Jurassic greenstone and metamorphosed basic igneous rocks of the Franciscan Formation, and Jurassic and/or Triassic metavolcanic rocks of the Galice and Rogue Formations.

Figure 2. Map of Average Annual Precipitation\*  
Six Rivers National Forest



\*Precipitation is given in inches per year.

The ultramafic rocks are Mesozoic ultrabasic intrusives, predominantly serpentinite and serpentized peridotite. On the Gasquet Ranger District these rocks are deeply weathered in many places, and form broad flat ridge tops.

The Igneous rock types on the Forest are predominantly undifferentiated Mesozoic quartz diorite and diorite. Some minor areas of basic igneous rocks such as gabbro occur. These areas of igneous rocks are mostly at high elevations where the batholiths or plutons form the mountains.

Figure 3 presents a general overview of the geologic types on the Forest.

### Vegetation

The major plant community on the Forest, and the primary timber producing community, is mixed conifer-hardwoods, consisting largely of Douglas-fir, tanoak, madrone, and some chinquapin, with associated species of brush, such as various species of *Ceanothus*, manzanita, and oaks. These areas are underlain mainly by metasedimentary and metavolcanic rocks. The soils are generally moderately fine textured with varying depth ranges.

Relatively small areas of gladelands occur on the sheared and fractured zones (melange) of the Franciscan Formation. The soils formed from this material are deep, fine-textured soils. These areas are concentrated on the Mad River Ranger District.

At higher elevations, generally above 4,000 feet, white and red fir are the dominate conifers, with an understory of Sadler oak and manzanita. Scattered sugar, ponderosa, and Jeffrey pines also occur, as do some chinquapin. The main rock type at higher elevations is quartz diorite, which produces deep, coarse textured soils.

Large and extensive areas of various species of pines, primarily knobcone and lodgepole, occur in association with sugar, ponderosa, and Jeffery pines. An understory consists of manzanita, huckleberry oak, California coffeeberry, and rhododendron. The most extensive of these areas are on the Gasquet District, where azalea and rhododendron, as well as red and evergreen huckleberry flourish. These areas are underlain by ultrabasic, or ultramafic, intrusive rocks, such as serpentinite and

peridotite. The soils are generally deep and fine textured. The shallower ultramafic soils produce grass.

The dryer, rockier and shallower areas are dominated by such non-commercial plant species as digger pine and live oak. These areas are usually found on the more resistant rocks, and on southerly exposures.

Inextensive areas of redwood-Douglas fir communities occur in the western-most portion of the Gasquet Ranger District, where coastal fog is an important factor governing the moisture regime of the soils. Other associated plant species are tanoak, rhododendron, swordfern, evergreen huckleberry, and alder.

The plant communities named in the mapping unit descriptions are from a vegetation classification system developed for California (Parker and Matayes 1978).

### Wildlife

A great diversity of wildlife species inhabit the Six Rivers National Forest. A number of sensitive and endangered species are found here, along with such harvest species as the black-tailed deer, black bear, gray fox, raccoon, gray squirrel, jackrabbit, and quail. Some species, such as the spotted owl, goshawk, and pileated woodpecker depend upon old-growth forest areas for their habitat (U.S.D.A. Forest Service, 1979).

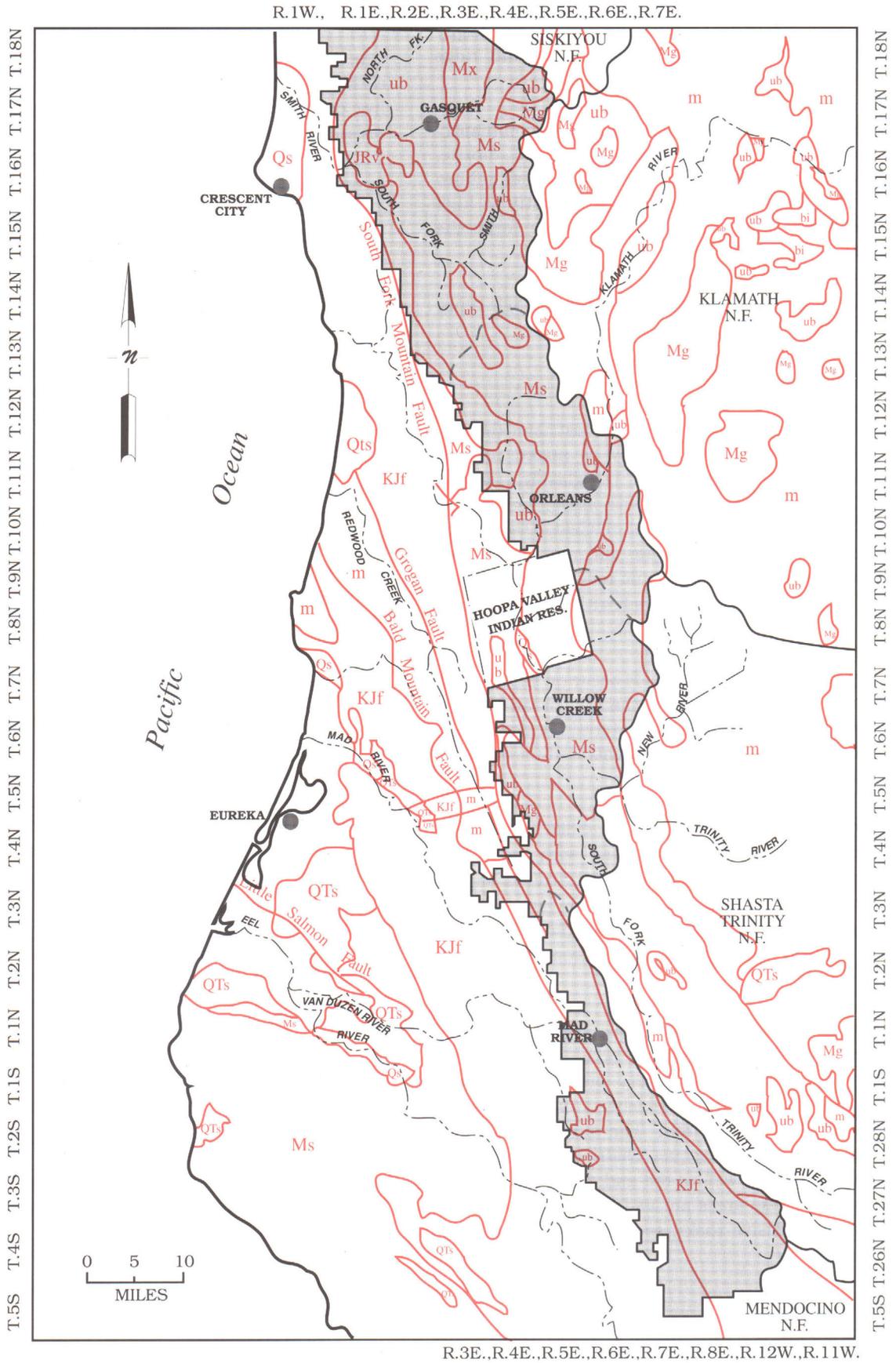
### Forest Uses

Timber production is the dominant land use on the Six Rivers National Forest. Watershed, fisheries, and wildlife value are important resources for land use. Recreation, including hunting, fishing, hiking, and offroad vehicle use, is also important. Range use is of significant extent only on the Mad River Ranger District, where areas of grassland produce forage for stock. Mineral resources are concentrated in the areas of ultrabasic intrusive rocks, which are of greatest extent on the Gasquet District.

### General Soil Map

An overview of the distribution and qualities of the Forest soils is shown in a general soil map presented for the four Ranger Districts in Figures 4, 5, 6, and 7. The nine general soil areas are outlined and described in Table 1.

Figure 3. Generalized Geology Map, Six Rivers National Forest



R.3E.,R.4E.,R.5E.,R.6E.,R.7E.,R.8E.,R.12W.,R.11W.

### Explanation of Figure 3.

Letters indicate generalized geologic units.

Qs	Quaternary sediments
QTs	Quaternary-Tertiary sedimentary rocks
QTV	Quaternary-Tertiary volcanic and intrusive rocks
KJf	Franciscan Formation
m	Pre-Cretaceous metamorphic rock
Jvr	Jura-Trias metavolcanic rocks
Mg	Mesozoic granitic rocks
bi	Mesozoic basic intrusive rocks
Ms	Mesozoic sedimentary rocks
Mx	Mesozoic mixed: Jura-Trias metavolcanic, Mesozoic basic intrusive, Upper Jurassic marine sedimentary, Mesozoic ultra-basic intrusive
ub	Mesozoic ultramafic intrusive rocks

Units bearing a particular geologic designation are generalized and locally contain areas of other rock types too small to show separately.



Approximate contact between map units



Fault, approximately located; definite, inferred, and concealed faults are not differentiated.

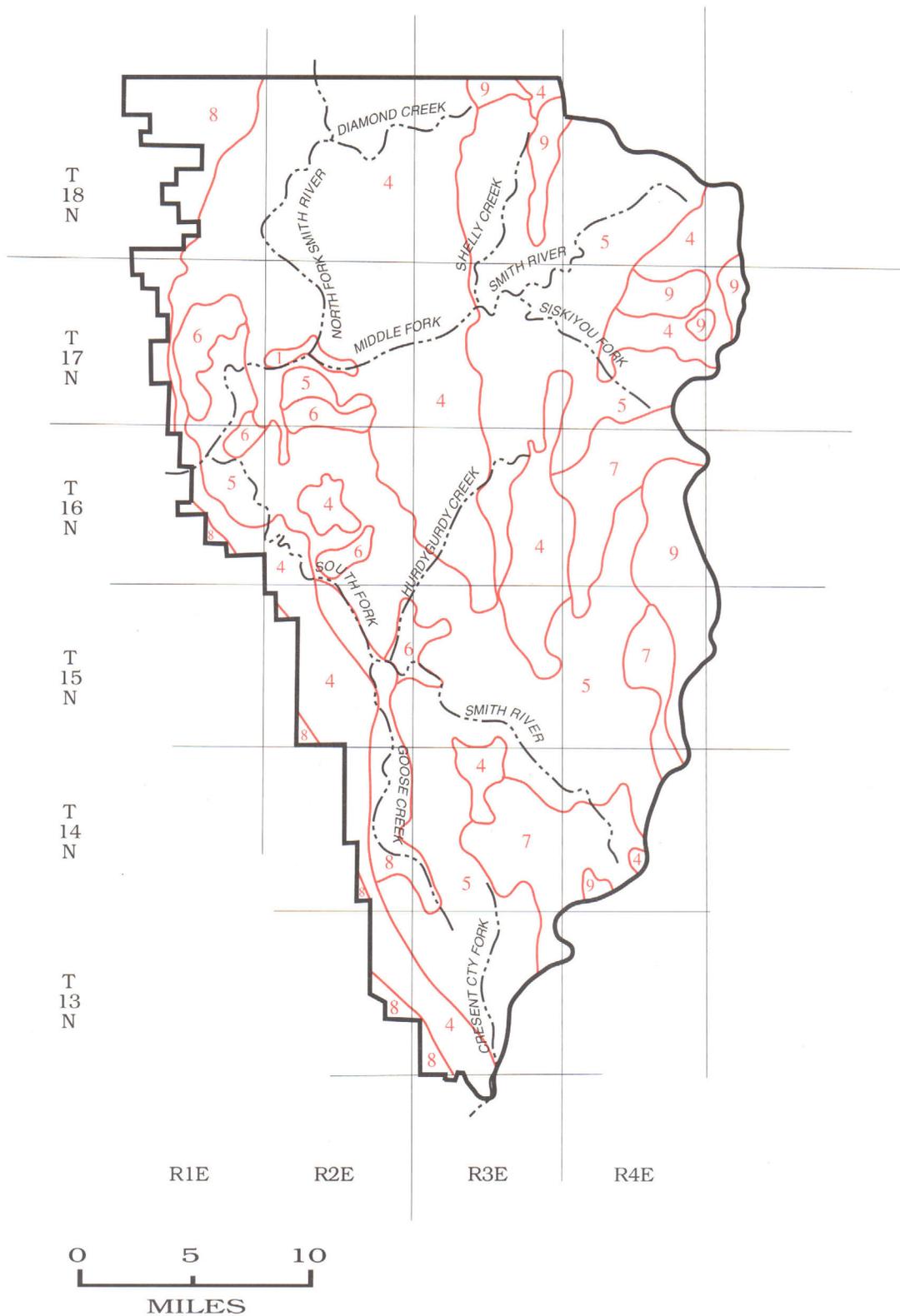
Contacts between geologic units are highly generalized and are not precise boundaries.

**TABLE 1. General Soil Map Legend.**

Map Symbol	General Soil Area	Dominant Mapping Units	Taxonomic Classes Characteristics*	Dominant Vegetation
1	Young alluvial soils	100	Xerofluvents, Riverwash	grass, willows, alder
2	Grass and oak soils	281,236,250	Xerochrepts, Haploxeralfs, Xerumbrepts;f,f-l,l-sk; mesic	grass, oaks
3	Rock outcrop and very steep and shallow soils	246,280,282, 300,323,400, 500	Lithic Xerochrepts, Haploxeralfs;l-sk;rock outcrop, rubble land;mesic and frigid	grass, canyon live oak, western white pine, Digger pine
4	Ultramafic soils	403,404,405, 411,412,420, 425,430,431	Haploxeralfs;f,f-l,l-sk c-sk;serpentinic and oxidic;mesic	Jeffrey pine, incense cedar, western white pine, sugar pine, knobcone pine, huckleberry
5	Major timber producing soils, >35% slope	212,222,225, 226,237,240, 245,252,260, 265,266,272, 312,324,325, 331,345,346	Haploxeralfs, Haploxerults, Xerochrepts;f-l,l-sk,c-sk,f; mesic	Douglas-fir
6	Major timber producing soils, <35% slope	210,225,261 253	Haploxeralfs, Haploxerults; f,f-l;mesic	Douglas-fir
7	Frigid soils	257,258,259	Xerumbrepts, Haploxeralfs; f-l,l-sk;frigid	white fir, Douglas-fir, Sadler oak
8	Moister(Udic) soils (redwood may occur)	209,227,228, 241,244,248	Dystrochrepts, Hapludults; l-sk,f-l,f;mesic	redwood, Douglas-fir, alder, huckleberry, rhododendron
9	Igneous soils	360,361,500, 501,503,524,	Xerorthents, Xerochrepts, Xerumbrepts, Haploxeralfs; f-l,co-l,l-sk,s-sk;frigid and mesic	white fir, Douglas-fir

\* f=fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 4. GENERAL SOIL MAP:  
 Gasquet Ranger District  
 Six Rivers National Forest

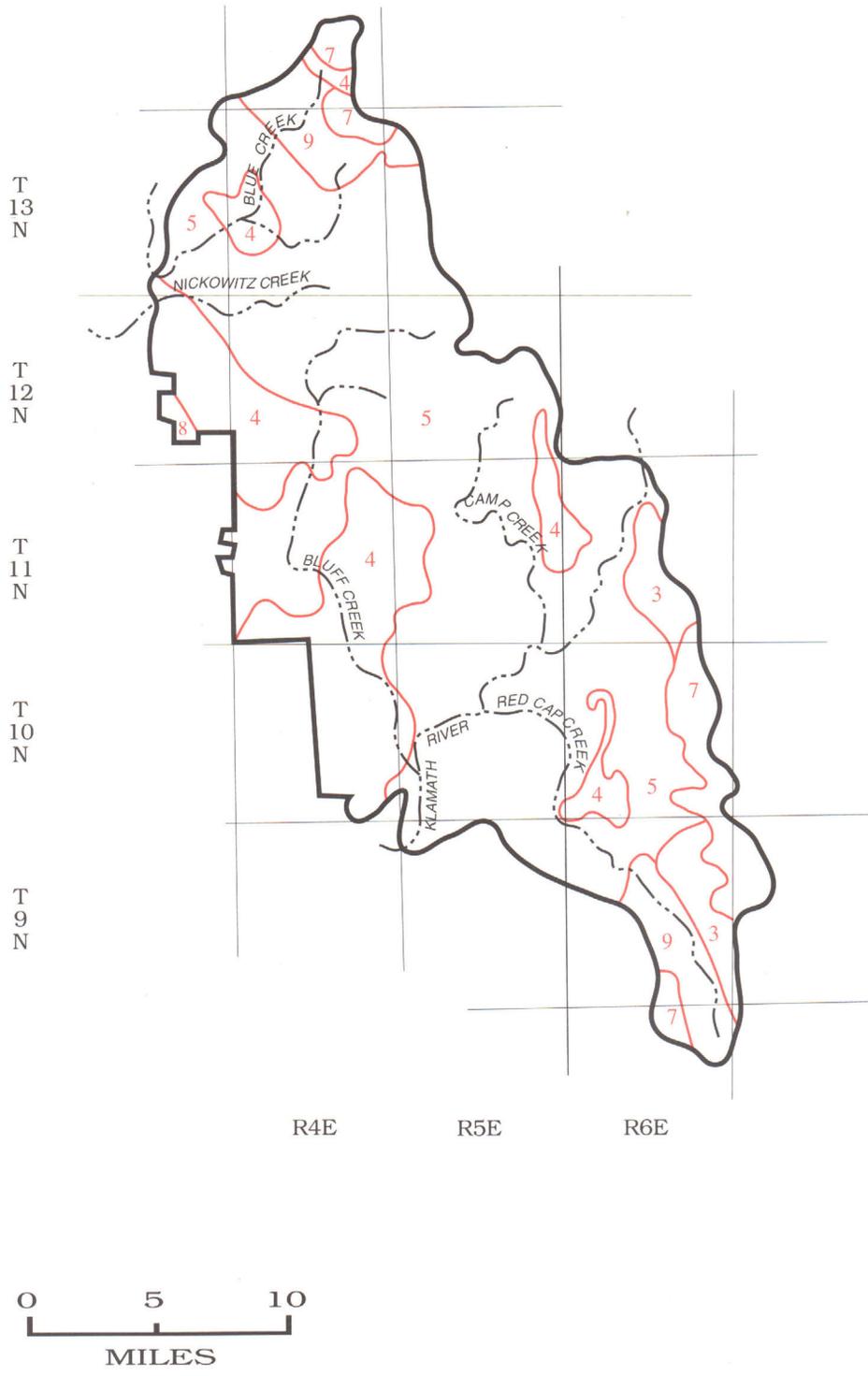


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3	Rock outcrop and very steep and shallow soils	246,280,282, 300,323,400, 500	Lithic Xerochrepts, Haploxeralfs;l-sk;rock outcrop, rubble land;mesic and frigid	grass, canyon live oak, western white pine, Digger pine
4	Ultramafic soils	403,404,405, 411,412,420, 425,430,431	Haploxeralfs;f,f-l,l-sk c-sk;serpentinitic and oxidic;mesic	Jeffrey pine, incense cedar, western white pine, sugar pine, knobcone pine, huckleberry
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6	Major timber producing soils, <35% slope	210,225,261 253	Haploxeralfs, Haploxerults; f,f-l;mesic	Douglas-fir
7	Frigid soils	257,258,259	Xerumbrepts, Haploxeralfs; f-l,l-sk;frigid	white fir, Douglas-fir, Sadler oak
8	Moister(Udic) soils (redwood may occur)	209,227,228, 241,244,248	Dystrochrepts, Hapludults; l-sk,f-l,f;mesic	redwood, Douglas-fir, alder, huckleberry, rhododendron
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\* f=fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 5. GENERAL SOIL MAP:  
 Orleans Ranger District  
 Six Rivers National Forest

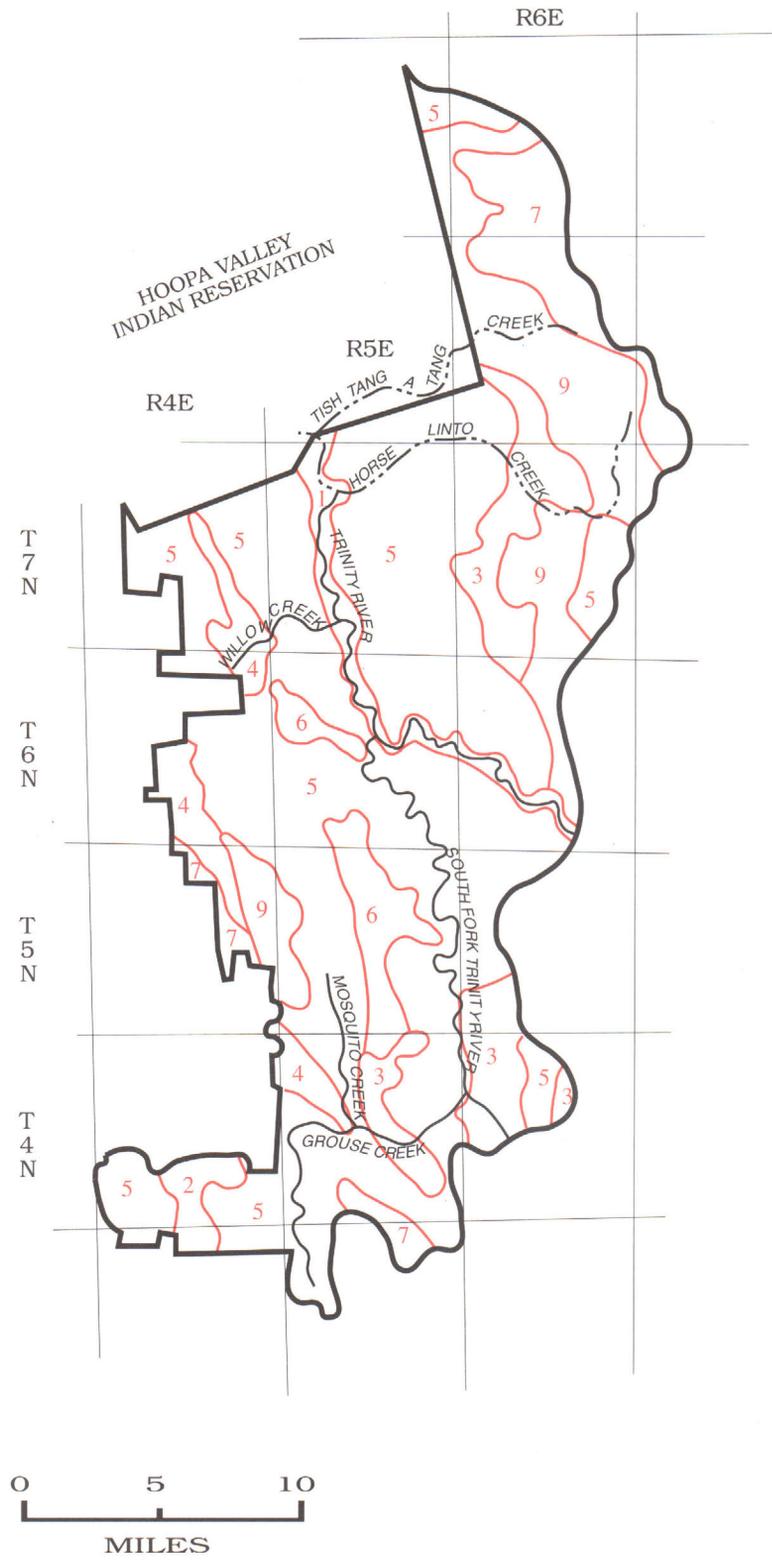


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7	Frigid soils	257,258,259	Xerumbrepts, Haploxeralfs; f-l,l-sk;frigid	white fir, Douglas-fir, Sadler oak
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\* f = fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 6. GENERAL SOIL MAP:  
 Lower Trinity Ranger District  
 Six Rivers National Forest

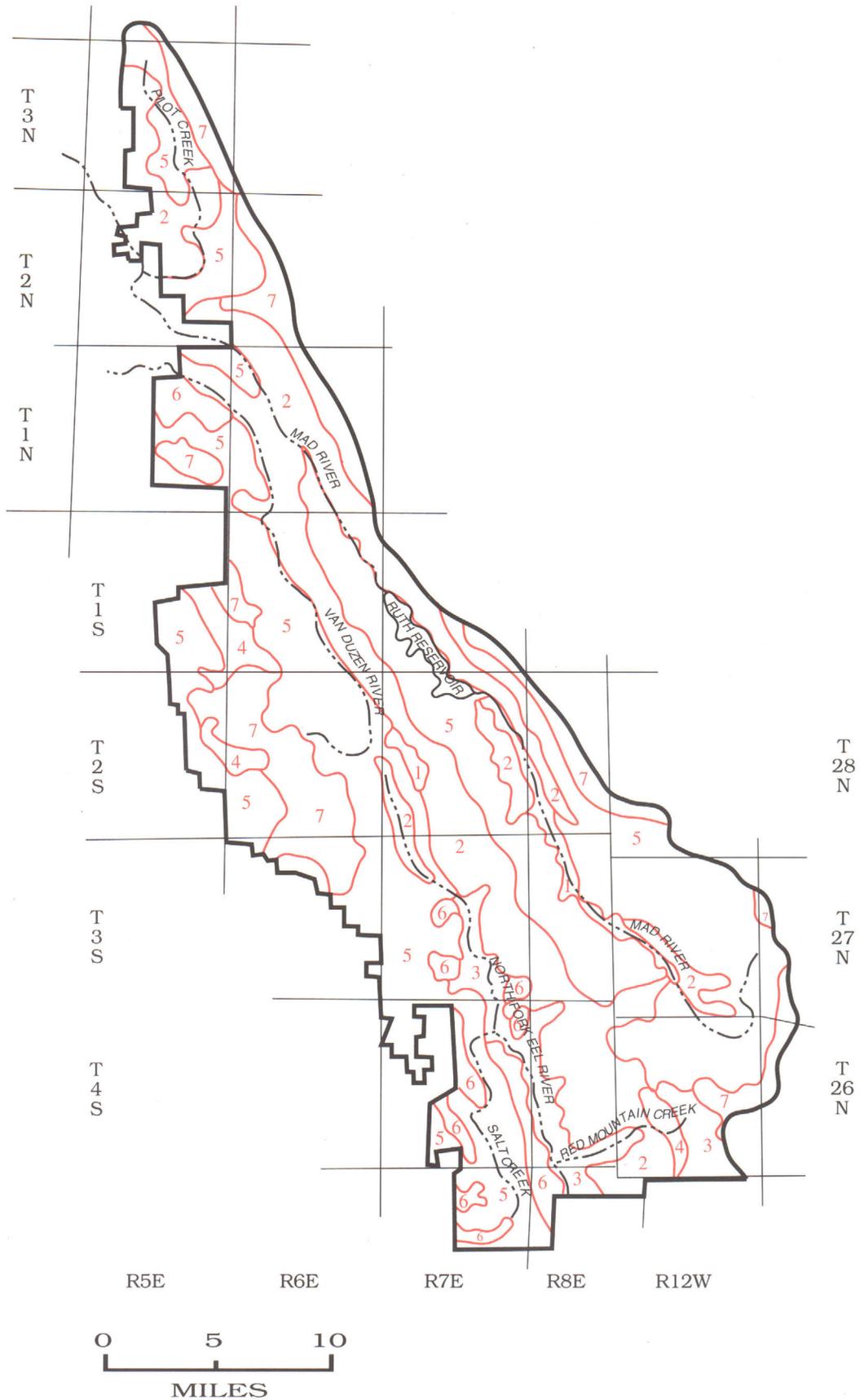


**TABLE 1. General Soil Map Legend.**

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3	Rock outcrop and very steep and shallow soils	246,280,282, 300,323,400, 500	Lithic Xerochrepts, Haploxeralfs;l-sk;rock outcrop, rubble land;mesic and frigid	grass, canyon live oak, western white pine, Digger pine
4	Ultramafic soils	403,404,405, 411,412,420, 425,430,431	Haploxeralfs;f,f-l,l-sk c-sk;serpentinitic and oxidic;mesic	Jeffrey pine, incense cedar, western white pine, sugar pine, knobcone pine, huckleberry
5	Major timber producing soils, >35% slope	212,222,225, 226,237,240, 245,252,260, 265,266,272, 312,324,325, 331,345,346	Haploxeralfs, Haploxerults, Xerochrepts;f-l,l-sk,c-sk,f; mesic	Douglas-fir
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\* f=fine;f-l=fine-loamy;co-l=coarse-loamy;l-sk=loamy-skeletal;c-sk=clayey-skeletal; s-sk=sandy-skeletal

Figure 7. GENERAL SOIL MAP:  
 Mad River Ranger District  
 Six Rivers National Forest



## Criteria for Soil Management Interpretations

In order for this soil survey to be effectively used the basic soil characteristics described during the survey were interpreted into various management capabilities and limitations such as timber productivity, regeneration potential, and erosion hazard. The following text provides an explanation of the criteria used to make the various management interpretations given in the map unit descriptions.

### Soil Erodibility (K-Factor)

Quantitative estimates of soil loss by overland flow of water can be made with the Universal Soil Loss Equation (USLE). This requires a K-factor, which is an index of soil erodibility. The K-factor was determined utilizing Wichmeier's nomograph ( J. Soil Water Conservation 26:189-193).

### Maximum Erosion Hazard

Many land use activities have the potential to cause erosion rates to exceed natural soil erosion or soil formation rates. Potential consequences of accelerated erosion include reductions in the productive capacity of the soil and adverse effects on water quality. Many interrelated factors are evaluated in an EHR system to determine whether land use activities would cause accelerated erosion, and to what degree accelerated erosion would cause adverse effects. It is designed to appraise the relative risk of accelerated sheet and rill erosion. The system does not rate gully erosion, dry ravel, wind erosion, or mass wasting.

The adjective erosion hazard ratings are described below in terms of the likelihood and consequences of accelerated erosion. As the risk of accelerated erosion increases, so does the likelihood that accelerated erosion will exceed soil formation rates. The risk and consequence becomes especially critical for shallow and moderately deep soils over consolidated materials.

The maximum EHR are based on little or no vegetative cover present and on the long-term average occurrence of 2-year, 6-hour storm events. Erosion hazard risks are greater when storm frequency, intensity and/or duration exceed long-term average occurrence, and risks are less when occurrence is below "average". The risks and consequences for adjective erosion hazard ratings are described below.

Low EHR. Accelerated erosion is not likely to occur, except in the upper part of the Low EHR numerical range,

or during periods of above average storm occurrence. If accelerated erosion does occur, adverse effects on soil productivity and to nearby water quality are not expected. Erosion control measures are usually not needed for these areas.

Moderate EHR. Accelerated erosion is likely to occur in most years. Adverse effects on soil productivity (especially to shallow and moderately deep soils) and to nearby water quality may occur for the upper part of the Moderate EHR numerical range, or during periods of above average storm occurrence. The need for erosion control should be evaluated for these areas. A wide selection of measures and application methods are available.

High EHR. Accelerated erosion will occur in most years. Adverse effects on soil productivity (especially to shallow and moderately deep soils) and to nearby water quality are likely to occur, especially during periods of above average storm occurrence. Erosion control is necessary for these areas to prevent accelerated erosion. The selection of measures and methods of application are somewhat limited.

Very high EHR. Accelerated erosion will occur in most years. Adverse effects on soil productivity and to nearby water quality are very likely to occur, even during periods of below average storm occurrence. Erosion control is essential for these areas to prevent accelerated erosion. The selection of measures and methods of application are limited.

### Soil Profile Permeability

Soil permeability is that quality of the soil that enables it to transmit water or air. The relative ratings are based upon soil structure, texture, porosity, and cracking.

### Soil Drainage

This is the natural drainage of a soil that permits the flow of excess water through it. It is affected by soil texture, structure, the pattern of subsurface water movement as affected by slope, slope position and shape, and the rate of water flow to the soil. The following classes are used: very poorly drained, poorly drained, somewhat poorly drained, moderately well drained, well drained, somewhat excessively drained, and excessively drained.

### Soil Manageability

Certain features of the land affect the relative ease of management with mechanized equipment. The soil man-

ageability classification rates soils and their topography on the basis of features which reduce the ease of equipment operation and increase required soil protection measures.

*Classes* of soil manageability are interpretations for individual soil map unit components. Soil map unit manageability *Groups* refer to an entire map unit which can be a consociation, association or complex of one or more soils.

Definitions of soil manageability classes and possible management option modifiers are given below.

**Class 1. Easy to manage.** Soils in this class are on stable slopes of less than 30 percent. They are moderately deep or deep and do not have any more than slight management problems. No management option modifiers(defined below) apply to this class.

**Class 2. Readily manageable.** Soils in this class are on slopes of less than 30 percent, but have a moderate management option modification, such as moderate erosion potential.

**Class 3. Moderately difficult to manage.** Soils in this class are on slopes between 30 to 60 percent, or have a substantial management option modification, or both.

**Class 4. Very difficult to manage.** Soils in this class are on slopes over 60 percent. They may or may not have other management option modifiers.

The criteria for management option modifiers are as shown in Table 2a. The class symbols are lower case for moderate and upper case for substantial reductions in the ease of management.

### Soil Manageability Groups

The soil manageability groups are defined by the soil manageability classes which apply to individual soil components in a soil map unit.

Definition of soil manageability groups:

**Group IA.** Class 1 components predominates with less than 70% class 2, and less than 10% classes 3 and 4 components by area.

**Group I.** Class 1 components predominate, with less than 50% class 2, less than 20% class 3, and less than 10% class 4 components by area.

**Group II.** Class 2 components predominate, with less than 50% class 3 components, and less than 20% class 4 components by area

**Group III.** Class 3 components predominate, with less than 40% class 4 components by area.

**Group IV.** Class 4 components predominate, or occupy at least 40% of the map unit area.

### Forest Survey Site Class

Timber site productivity ratings for the various soils in this survey are given in Forest Survey Site Class. The original field measurements of site quality was done using the McArdle growth curves (Technical Bulletin No. 201) for Douglas-fir and locally developed site curves for white fir. These values were then converted into Forest Survey Site Class using the table in Forest Service Manual 2490.6-9, R-5 Supplement 232, dated May 1980. The growth rate for each Forest Survey Site Class is given below in cubic feet/acre/year.

1	greater than 225
2	165 to 225
3	120 to 165
4	85 to 120
5	50 to 85
6	20 to 50
7	less than 20

The term NC means not capable of growing commercial conifer species.

### Regeneration Potential

The regeneration potential is a relative rating of the potential for survival of bare root seedlings in clearcut areas the first season following planting. Table 2b consists of a number of factors to evaluate this potential. In most cases moisture available to the seedlings is the most critical factor. This is related to available water holdings capacity and aspect. Temperature, as affected by aspect and elevation, is also an important factor, as is fertility, as related to the parent material of the soil. Other factors such as compaction are not rated but would serve to further reduce regeneration success.

### Available Water Holding Capacity (AWC) Rating

This is the capacity of a soil to hold water in a form available to plants. This is approximately the moisture content between field capacity and permanent wilting

**TABLE 2a. Criteria for Management Option Modifiers**

Soil or Topographic Feature	Substantial Criterion	Symbol	Moderate Criterion	Symbol
Slope Gradient	> 60%	G	30- 60%	g
Slope Stability	Low	S	Moderate	s
Maximum Erosion Hazard	High or Very High	E	Moderate	e
Soil Depth	< 10 inches	D	10- 20 inches	d
AWC in Top 20" of Soil	< 1.2 inches	P	1.2- 2.4 inches	p
Wetness	Poorly drained	W	Somewhat poorly drained	w
Rock Outcrop or Surface Boulders	> 15% of land surface	X	3- 15% of surface	x

**Table 2b. Regeneration Potential in Clearcut Areas**

Factor	High Potential	Rating	Moderate Potential	Rating	Low Potential	Rating	Rating Assigned
AWC§ in top 24 inches	3.2 inches	1-3	3.2-2.0 inches	4-7	2.0 inches	8-11	
Aspect (moisture and temperature)	NW to SE (271° to 134°)	1	SE to W (135° to 270°)	3			
Temperature	Mesic	1	Frigid ~	3			
Nutrient status as related to parent rock	Sedimentary metasedimentary igneous metaigneous	1	Ultramafic	5			

TOTAL \_\_\_\_\_

**Interpretation of Rating Total**

Total Rating	Regeneration Potential
4-8	High
9-12	Moderate
13-16	Low
17-22	Very Low

§ AWC = available water holding capacity

~ On frigid soils where treatment leaves adequate shelter for seedlings, rate one category higher.

\* From the Soil Resource Inventory, Interim Report, Lower Trinity Ranger District, southern portion, Six Rivers National Forest.

point. The amount of water a soil can hold depends primarily upon its texture and depth. Gravel, cobbles, and stones do not hold moisture and will therefore reduce the moisture holding capacity of a soil. The ratings\* are:

Very Low	0 - 2.5 inches ( 0 - 6.25 cm)
Low	2.6- 5.0 inches ( 6.26-12.5 cm)
Moderate	5.1- 7.5 inches (12.6 -18.75 cm)
High	7.6-10.0 inches (18.75-25.0 cm)
Very High	>10.0 inches (>25 cm)

\*From the Soil Resource Inventory, Interim Report, Lower Trinity Ranger District, Southern Portion, Six Rivers National Forest.

### Inches of AWC in Top 20 Inches of Soil

This is the estimated available waterholding capacity in the top 20 inches of soil. This value is important for estimating the relative regeneration potential.

### Susceptibility to Burning Damage

Soil damage can sometimes occur from burning. The risk of damage increases proportionately with the intensity of heat. The damage is mainly related to the loss of organic matter. Some soils have characteristics which enable them to withstand this loss better than other soils. These characteristics are used to rate the soils for their susceptibility to damage from burning, as expressed in Table 2c. The rating system is intended to be used as a general guideline. Other factors not mentioned may alter the rating.

### Hydrologic Soil Group

The hydrologic soil group indicates the soils potential for runoff. Factors considered in determining the hydrologic soil group include structure and texture of surface horizon, permeability of surface horizon, and the depth at which a reduction in permeability begins. The group are classified as follows:

- Group A - very low runoff potential
- Group B - low runoff potential
- Group C - moderate runoff potential
- Group D - high runoff potential

### Unified Soil Classification

The Unified Soil Classification system was established by the U.S. Army Corps of Engineers. It is based on the identification of soils according to their texture and plasticity, and on their performance as engineering construction materials. The Unified Soil Classification ratings assigned in this report were developed from field estimates of the U.S.D.A. textures and are intended as general guides. The actual Unified Soil Classification ratings may vary.

### Potential Failure as Road Subgrade

Soils are identified according to the potential failure due to traffic loading. Groupings are based on a generalized classification which is intended to identify potential problem soils that will probably require intensive soil sampling and testing.

The three potential failure ratings and their characteristics are as follows:

1. **Yes** - Poor bearing capacity: soils are rich in inorganic clays of moderate to high plasticity, elastic silts and clays, or compressible organic silts. Sampling and testing are recommended for structural sections. Soils in this group include CL, OL, MH, CH, and OH (Unified Soil Classification System; see above for explanation).
2. **Possible** - Uncertain bearing capacity: sampling and testing are recommended.
3. **No** - Adequate bearing capacity: soils typically have sufficient bearing capacity for a minimal structural section on low volume local roads. Sampling and testing recommended for Arterial and Collector roads.

### Seeding Recommendations

Seeding recommendations were developed from information regarding the soil profile, soil temperature and moisture regimes, elevation, and soil fertility. Species selection adapted from U.S.D.A., Soil Conservation Service (1976).

Three recommendations were developed and are shown in Table 2d.

**TABLE 2c. Susceptibility to Burning Damage**

Factor	Low Susceptibility	Rating	Moderate Susceptibility	Rating	High Susceptibility	Rating	Rating Assigned
Organic Matter in top 4"	>1%	1			<1%	2	
Coarse Fragments in top 4"	<35%	1	35-65%	2	>65%	5	
Texture in top 4"	scl, cl, sicl, sc, sic, c	1	l, sil, si	2	s, ls, sl	3	
Parent Rock	sediments, metasediments, basic igneous, metaigneous	2	Fault gouge	5	acid igneous, ultramafic	7	
Slope %	0-35%	1	35-70%	2	>70%	3	

TOTAL \_\_\_\_\_

**Interpretation of Rating Total**

Total Rating	Susceptibility to Burning Damage §
6-9	Low
10-14	Moderate
15-20	High

§ Rate soils predominantly on SE to W aspects one category higher.

\* From the Soil Resource Inventory, Interim Report, Lower Trinity Ranger District, southern portion, Six Rivers National Forest.

**TABLE 2d. Seeding Recommendations**

**1. General Forest Soils\***

Vegetation Type	Pounds/Acre	Seeds/Feet <sup>2</sup>
<b>Agropyron trichophorum</b> "Luna" (Luna pubescent wheatgrass)	15	24
<b>Dactylis glomerata</b> (Palestine orchardgrass)	6	50
<b>Trifolium hirtum</b> (Rose clover)	10	22
<b>Lolium rigidum</b> "Wimmera 62" (Wimmera 62 ryegrass)	15	52
<b>Pea ampla</b> "Sherman" (Sherman big bluegrass)	2	26
TOTAL	48	174

**2. Ultrabasic and Dioritic Soils\***

Vegetation Type	Pounds/Acre	Seeds/Feet <sup>2</sup>
<b>Bromus mollis</b> "Blando" (Blando brome)	5	24
<b>Viscia dasycarpa</b> "Lana" (Lana vetch)	80	16
<b>Trifolium hirtum</b> (Rose clover)	10	22
<b>Lolium rigidum</b> "Wimmera 62" (Wimmera 62 ryegrass)	20	70
<b>Agropyron trichophorum</b> "Luna" (Luna pubescent wheatgrass)	10	16
TOTAL	125	148

**3. Frigid or Udic Soils\***

Vegetation Type	Pounds/Acre	Seeds/Feet <sup>2</sup>
<b>Dactylus glomerata</b> "Palestine" (Palestine orchardgrass)	5	42
<b>Secale cereale</b> (Cereal rye)	60	20
<b>Trifolium incarnatum</b> (Crimson clover)	4	11
<b>Lotus corniculatus</b> "Cascade" (Broadleaf trefoil)	2	18
<b>Agropyron trichophorum</b> "Luna" (Luna pubescent wheatgrass)	20	32
TOTAL	91	123

§ Recommendations developed by Scott R. Miles, Soil Scientist, Six Rivers National Forest

\* Seeded with 400 lbs/acre of 16-20-0 plus 1500 lbs/acre of wood fiber mulch.

The above species are not native to Six Rivers National Forest. If native species can be used, they should be used. For information on the utilization of natives and lists of appropriate species for this forest please refer to "A Study of Plant Materials Suitable for Use in Watershed and Wildlife Habitat Improvement in the Trinity River Watershed, California" by Matthews, Furniss and Leskiw.

## **Soil Map Units**

### **Identification and Extent**

The map units of the Order 3 soil survey are delineated and identified by numerical map symbols on aerial photographs (not included in this report). The Forest Service has transferred this mapping to 7 1/2 minute quadrangle sheet overlays at a scale of 1:24,000. A reduced copy of these maps (1:63,360) are provided at the end of this report.

Each map symbol identifies a soil map unit composed of one, two, or three major soil (or land type) components. Components of compound mapping units are associated in a more or less consistent geographic pattern on the landscape. The names of map units designate the major components. Map symbols and map unit names are equated in the map unit legend. Tables 3 and 4 present the map unit legend in numerical and alphabetical order, respectively.

The approximate area of each map unit was measured on the aerial photograph field sheets by counting dots on transparent overlays. The areas and proportionate extent of map units are given in Tables 3 and 4.

The 1966 Orleans Ranger District Soil Survey was made before a unified identification legend was established for the Forest. Symbols shown on the field sheets are different from the symbols listed in Tables 3 and 4. A conversion legend is presented in Table 5.

### **Soil Map Unit Descriptions and Management Interpretations**

Soil map unit descriptions including interpretations for management are given in this section following Table 5.

The criteria used to make the soil management interpretations is presented in the section beginning on page 18.

**TABLE 3. Map Unit Legend, Area Percent, and Acreage, Numerical**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA %	APPROX. ACREAGE
100	Typic Xerofluvents-Riverwash association, 2 to 10 percent slopes	1.23	13,550
102	Pits and Dumps	.03	280
103	Xerochrepts-Haploxerults complex, 30 to 70 percent slopes	.45	4,950
125	Horseshoe family, deep, 10 to 40 percent slopes	.14	1,580
200	Rock outcrop-Lithic Xerorthents complex, metaigneous, 60 to 90 percent slopes		Combined with 300
209	Hartleton-Elioak-Chenango families association, deep, 20 to 50 percent slopes	.07	800
210	Skalan-Goldridge-Clallam families association, deep, 20 to 70 percent slopes	.93	10,250
211	Clallam family, moderately deep, 30 to 50 percent slopes	.03	320
212	Clallam family, moderately deep, 50 to 70 percent slopes	2.50	27,580
213	Clallam family, moderately deep-Rock outcrop, metasedimentary complex, 70 to 90 percent slopes		Combined with 214
214	Clallam family, moderately deep-Rock outcrop, metasedimentary complex, 70 to 90 percent slopes	.07	800
215	Clallam family, moderately deep, unstable, 50 to 70 percent slopes	.75	9,150
216	Clallam family, moderately deep, unstable, 50 to 70 percent slopes		Combined with 215
220	Hullt-Coyata-Clallam families association, deep, 35 to 70 percent slopes	.34	3,700
221	Hullt-Coyata-Clallam families association, deep, dry, 35 to 70 percent slopes	.38	4,140
222	Goldridge family, deep, 30 to 50 percent slopes	.29	4,100
223	Goldridge family, deep, 50 to 70 percent slopes	.11	1,120
224	Goldridge family, deep, 30 to 50 percent slopes		Combined with 222
225	Goldridge-Kistirn-Aiken families association, deep, 5 to 70 percent slopes	1.57	17,290
226	Kistirn-Goldridge families, deep-Deadwood family association, 30 to 70 percent slopes	1.98	21,830
227	Elioak-Hartleton-Aiken families association, deep, 15 to 50 percent slopes	.27	2,930
228	Hartleton-Elioak families, deep-Holyoke family association, 30 to 70 percent slopes	.10	1,070
230	Skalan-Goldridge families complex, deep, 20 to 65 percent slopes	.54	6,020
231	Goldridge family, deep, 15 to 30 percent slopes	.16	1,770
232	Skalan-Hugo families association, deep, 25 to 65 percent slopes	.17	1,890
235	Skalan family, moderately deep, 25 to 70 percent slopes	.06	710
236	Doty-Hecker families association, deep, 25 to 70 percent slopes	2.07	22,890
237	Clallam family, moderately deep, unstable-Melbourne family, deep association, 35 to 70 percent slopes	1.57	17,950
238	Melbourne-Soulajule families association, deep, 5 to 35 percent slopes	.59	6,530

**TABLE 3. Map Unit Legend, Area Percent, and Acreage, Numerical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA %	APPROX. ACREAGE
240	Hugo family, deep-Clallam family, moderately deep association, 25 to 70 percent slopes	1.11	12,200
241	Skinner-Chenango families association, deep, 25 to 70 percent slopes	.15	1,700
242	Maymen family-Clallam family, moderately deep, unstable association, 35 to 90 percent slopes	.34	3,720
243	Maymen family-Rock outcrop, metasedimentary complex, 60 to 80 percent slopes	.16	1,720
244	Chenango-Skinner families, deep-Holyoke family association, 35 to 80 percent slopes	.20	2,280
245	Clallam family, moderately deep-Hugo family, deep-Maymen family association, 35 to 70 percent slopes	6.62	73,990
246	Clallam family, moderately deep-Maymen family association, 45 to 80 percent slopes	2.33	25,660
247	Clallam family, moderately deep-Hugo family, deep-Maymen family association, 35 to 70 percent slopes		Combined with 245
248	Chenango-Skinner families, deep-Holyoke family association, 35 to 80 percent slopes		Combined with 244
250	Oxalis-Hecker-Doty families association, deep, 25 to 70 percent slopes	1.15	12,660
252	Melbourne-Holland families association, deep, 35 to 70 percent slopes	3.24	35,690
253	Melbourne-Holland families association, deep, 5 to 35 percent slopes	.33	3,660
254	Deadwood-Skymor families association, 35 to 70 percent slopes	.62	6,870
256	Hecker family, deep, 35 to 70 percent slopes	1.34	14,820
257	Bins-Nanny families, deep-Woodseye family association, 5 to 35 percent slopes	1.14	12,580
258	Albus-Race families association, deep, 35 to 70 percent slopes	.96	10,550
259	Nanny family, deep-Woodseye family-Bins family, deep association, 35 to 70 percent slopes	2.92	32,250
260	Skalan-Kistirn-Holland families association, deep, 35 to 70 percent slopes	6.68	74,743
261	Holland-Goldridge families association, deep, 5 to 35 percent slopes	1.5	16,760
265	Clallam-Hugo-Holland families association, deep, dry, 35 to 70 percent slopes	4.70	51,810
266	Clallam-Hugo-Holland families association, deep, 35 to 70 percent slopes	3.52	38,800
271	Hugo family, moderately deep, 30 to 50 percent slopes	.45	4,970
272	Hugo family, moderately deep, 50 to 70 percent slopes	4.63	51,040
273	Hugo family, moderately deep, 50 to 70 percent slopes		Combined with 272
274	Hugo family, moderately deep-Rock outcrop, metasedimentary complex, 50 to 70 percent slopes	.79	8,690
280	Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop, metasedimentary association, 45 to 85 percent slopes	3.04	33,590

**TABLE 3. Map Unit Legend, Area Percent, and Acreage, Numerical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA %	APPROX. ACREAGE
281	Clallam family, deep, extremely gravelly-Deadwood family association, 35 to 75 percent slopes	2.00	22,010
282	Deadwood family-Rock outcrop, metasedimentary-Voorhies family, moderately deep association, 40 to 85 percent slopes	1.16	12,770
300	Rock outcrop-Lithic Xerorthents complex, metaigneous, 60 to 90 percent slopes	1.19	13,110
301	Rock outcrop-Lithic Xerorthents complex, metaigneous, 60 to 90 percent slopes		Combined with 300
311	Holland family, deep, 30 to 50 percent slopes		Combined with 312
312	Holland family, deep, 30 to 50 percent slopes	.39	4,310
315	Aiken-Holland families complex, deep, 10 to 40 percent slopes		Combined with 316
316	Aiken-Holland families complex, deep, 10 to 40 percent slopes	.10	1,150
317	Nanny family, moderately deep, 50 to 70 percent slopes	.30	3,000
318	Nanny family, moderately deep, 50 to 70 percent slopes		Combined with 317
320	Hugo family, moderately deep-Maymen family complex, 30 to 50 percent slopes	.14	1,590
321	Hugo family, moderately deep-Maymen family complex, 50 to 70 percent slopes	1.05	11,550
322	Maymen family-Rock outcrop, metaigneous complex, 70 to 90 percent slopes		Combined with 323
323	Maymen family-Rock outcrop, metaigneous complex, 70 to 90 percent slopes	.71	7,840
324	Hugo family, deep, 30 to 50 percent slopes	.29	3,220
325	Hugo family, moderately deep, 50 to 70 percent slopes		Combined with 272
326	Hugo family, moderately deep, 50 to 70 percent slopes		Combined with 272
327	Hugo family, moderately deep-Holland family, deep complex, 30 to 50 percent slopes	.10	1,110
331	Clallam family, moderately deep-Skalan family, deep association, 35 to 75 percent slopes	.40	4,420
335	Althouse-Holland families association, deep, stony, 30 to 70 percent slopes	.27	3,060
336	Clallam-Nanny families association, deep, 30 to 60 percent slopes	.34	3,810
340	Clallam family, moderately deep-Rock outcrop, metaigneous complex, 45 to 80 percent slopes	.13	1,380
344	Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop, metasedimentary association, 45 to 85 percent slopes		Combined with 280
345	Clallam family, extremely gravelly-Skalan-Goldridge families, association, deep, 35 to 70 percent slopes	2.25	24,840
346	Goldridge family, deep-Clallam family, moderately deep-Aiken family, deep association, 40 to 90 percent slopes	1.03	11,360
348	Skalan-Aiken families association, deep, 5 to 40 percent slopes	.53	5,880
349	Goldridge-Aiken families association, deep, 5 to 40 percent slopes	.53	5,860
351	Skalan-Holland families association, deep, 20 to 65 percent slopes	.10	1,110

**TABLE 3. Map Unit Legend, Area Percent, and Acreage,  
Numerical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA %	APPROX. ACREAGE
356	Raisio-Clallam families complex, moderately deep, 45 to 75 percent slopes	.17	1,840
360	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes		Combined with 361
361	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes	.63	7,010
362	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes		Combined with 361
400	Rock outcrop-Rubble land association, ultramafic, 30 to 90 percent slopes	.37	4,110
401	Lithic Haploxeralfs, ultramafic-Ishi Pishi family, deep complex, 35 to 70 percent slopes		Combined with 402
402	Lithic Haploxeralfs, ultramafic-Ishi Pishi family, deep complex, 35 to 70 percent slopes	.21	2,340
403	Oragran family-Weitchpec family, moderately deep-Lithic Haploxeralfs, ultramafic complex, 30 to 50 percent slopes	1.15	12,710
404	Oragran family-Weitchpec family, moderately deep-Lithic Haploxeralfs, ultramafic complex, 50 to 70 percent slopes	1.33	14,630
405	Oragran family-Lithic Haploxeralfs, ultramafic-Rock outcrop, ultramafic complex, 50 to 70 percent slopes	.61	6,730
409	Althouse family, moderately deep-Skymor family, ultramafic association, 35 to 75 percent slopes	.10	1,090
411	Hungry family, deep, 35 to 70 percent slopes	.54	5,970
412	Madden family, moderately deep, 20 to 50 percent slopes	.52	5,800
420	Gasquet-Walnett families, deep, stony-Jayel family, moderately deep association, 10 to 50 percent slopes	2.56	27,870
425	Lithic Haploxeralfs, ultramafic-Walnett family, deep, stony association, 25 to 70 percent slopes	.82	9,080
430	Jayel family, moderately deep-Walnett family, deep-Lithic Xerochrepts, ultramafic association, stony, 35 to 75 percent slopes	5.08	56,050
431	Jayel family, moderately deep, stony-Walnett family, deep, stony-Oragran family complex, 5 to 35 percent slopes	1.74	19,250
500	Rock outcrop, dioritic	.81	8,950
501	Rock outcrop-Maymen family complex, dioritic, 50 to 90 percent slopes	.62	6,810
503	Rock outcrop, dioritic-Wapal family, moderately deep association, 45 to 75 percent slopes	.61	6,770
515	Chaix family, moderately deep, 50 to 70 percent slopes	.14	1,510
517	Chaix family, moderately deep-Rock outcrop, dioritic complex, 70 to 90 percent slopes	.11	1,170
520	Chaix family, moderately deep, 30 to 50 percent slopes	.20	2,230
522	Chaix family, moderately deep-Holland family, deep, dioritic association, 25 to 65 percent slopes	.37	4,170
524	Deadman-Rogue families association, deep, 20 to 70 percent slopes	.70	7,720
525	Nanny family, deep, dioritic-Althouse family, deep, stony association 30 to 70 percent slopes	1.15	12,640

**TABLE 3. Map Unit Legend, Area Percent, and Acreage, Numerical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA %	APPROX. ACREAGE
530	Maymen family, dioritic, 45 to 70 percent slopes	.54	5,940
535	Deadman family, moderately deep, 0 to 30 percent slopes	.06	650
540	Chaix family, moderately deep-Holland family, deep, dioritic association, 25 to 65 percent slopes		Combined with 522
550	Wapal family, moderately deep, 35 to 65 percent slopes	.25	2,780
552	Wapal family, moderately deep-Deadman family, deep complex, 35 to 65 percent slopes	.57	6,310
554	Wapal family, moderately deep-Hugo family, deep, dioritic association, 20 to 65 percent slopes	.26	2,900
560	Hugo family, deep, dioritic, 15 to 35 percent slopes	.26	2,880
—	Wet meadow (each symbol represents 10 acres)		
		100.00	1,105,243

**Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA%	APPROX. ACREAGE
316	Aiken-Holland families complex, deep, 10 to 40 percent slopes	.10	1,150
258	Albus-Race families association, deep, 35 to 70 percent slopes	.96	10,550
335	Althouse-Holland families association, deep, stony, 30 to 70 percent slopes	.27	3,060
409	Althouse family, moderately deep-Skymor family, ultramafic association, 35 to 75 percent slopes	.10	1,090
257	Bins-Nanny families, deep-Woodseye family association, 5 to 35 percent slopes	1.14	12,580
520	Chaix family, moderately deep, 30 to 50 percent slopes	.20	2,230
515	Chaix family, moderately deep, 50 to 70 percent slopes	.14	1,510
522	Chaix family, moderately deep-Holland family, deep, dioritic association, 25 to 65 percent slopes	.37	4,170
517	Chaix family, moderately deep-Rock outcrop, dioritic complex, 70 to 90 percent slopes	.11	1,170
244	Chenango-Skinner families, deep-Holyoke family association, 35 to 80 percent slopes	.20	2,280
211	Clallam family, moderately deep, 30 to 50 percent slopes	.03	320
212	Clallam family, moderately deep, 50 to 70 percent slopes	2.50	27,580
215	Clallam family, moderately deep, unstable, 50 to 70 percent slopes	.75	9,150
281	Clallam family, deep, extremely gravelly-Deadwood family association, 35 to 75 percent slopes	2.00	22,010
266	Clallam-Hugo-Holland families association, deep, 35 to 70 percent slopes	3.52	38,800
265	Clallam-Hugo-Holland families association, deep, dry, 35 to 70 percent slopes	4.70	51,810
245	Clallam family, moderately deep-Hugo family, deep-Maymen family association, 35 to 70 percent slopes	6.62	73,990
246	Clallam family, moderately deep-Maymen family association, 45 to 80 percent slopes	2.33	25,660
237	Clallam family, moderately deep, unstable-Melbourne family, deep association, 35 to 70 percent slopes	1.57	17,330
336	Clallam-Nanny families association, deep, 30 to 60 percent slopes	.34	3,810
340	Clallam family, moderately deep-Rock outcrop, metaigneous complex, 45 to 80 percent slopes	.13	1,380
214	Clallam family, moderately deep-Rock outcrop, metasedimentary complex, 70 to 90 percent slopes	.07	800
331	Clallam family, moderately deep-Skalan family, deep association, 35 to 75 percent slopes	.40	4,420
345	Clallam family, extremely gravelly-Skalan-Goldridge families, association, deep, 35 to 70 percent slopes	2.25	24,840
535	Deadman family, moderately deep, 0 to 30 percent slopes	.06	650
524	Deadman-Rogue families association, deep, 20 to 70 percent slopes	.70	7,720
280	Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop, metasedimentary association, 45 to 85 percent slopes	3.04	33,590

**Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA%	APPROX. ACREAGE
282	Deadwood family-Rock outcrop, metasedimentary-Voorhies family, moderately deep association, 40 to 85 percent slopes	1.16	12,770
254	Deadwood-Skymor families association, 35 to 70 percent slopes	.62	6,870
236	Doty-Hecker families association, deep, 25 to 70 percent slopes	2.07	22,890
227	Elioak-Hartleton-Aiken families association, deep, 15 to 50 percent slopes	.27	2,930
420	Gasquet-Walnett families, deep, stony-Jayel family, moderately deep association, 10 to 50 percent slopes	2.56	27,870
231	Goldridge family, deep, 15 to 30 percent slopes	.16	1,770
222	Goldridge family, deep, 30 to 50 percent slopes	.29	4,100
223	Goldridge family, deep, 50 to 70 percent slopes	.11	1,120
349	Goldridge-Aiken families association, deep, 5 to 40 percent slopes	.53	5,860
346	Goldridge family, deep-Clallam family, moderately deep-Aiken family, deep association, 40 to 90 percent slopes	1.03	11,360
225	Goldridge-Kistirn-Aiken families association, deep, 5 to 70 percent slopes	1.57	17,290
209	Hartleton-Elioak-Chenango families association, deep, 20 to 50 percent slopes	.07	800
228	Hartleton-Elioak families, deep-Holyoke family association, 30 to 70 percent slopes	.10	1,070
256	Hecker family, deep, 35 to 70 percent slopes	1.34	14,820
312	Holland family, deep, 30 to 50 percent slopes	.39	4,310
361	Holland family, deep-Clallam family, moderately deep-Cotati family, deep association, gabbroic, 20 to 65 percent slopes	.63	7,010
261	Holland-Goldridge families association, deep, 5 to 35 percent slopes	1.52	16,760
125	Horseshoe family, deep, 10 to 40 percent slopes	.14	1,580
324	Hugo family, deep, 30 to 50 percent slopes	.29	3,220
240	Hugo family, deep-Clallam family, moderately deep association, 25 to 70 percent slopes	1.11	12,200
560	Hugo family, deep, dioritic, 15 to 35 percent slopes	.26	2,880
271	Hugo family, moderately deep, 30 to 50 percent slopes	.45	4,970
272	Hugo family, moderately deep, 50 to 70 percent slopes	4.63	51,040
327	Hugo family, moderately deep-Holland family, deep complex, 30 to 50 percent slopes	.10	1,110
320	Hugo family, moderately deep-Maymen family complex, 30 to 50 percent slopes	.14	1,590
321	Hugo family, moderately deep-Maymen family, complex, 50 to 70 percent slopes	1.05	11,550
274	Hugo family, moderately deep-Rock outcrop, metasedimentary complex, 50 to 70 percent slopes	.79	8,690
220	Hullt-Coyata-Clallam families association, deep, 35 to 70 percent slopes	.34	3,700

**Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA%	APPROX. ACREAGE
221	Hull-Coyata-Clallam families association, deep, dry, 35 to 70 percent slopes	.38	4,140
411	Hungry family, deep, 35 to 70 percent slopes	.54	5,970
431	Jayel family, moderately deep, stony-Walnett family, deep, stony-Oragran family complex, 5 to 35 percent slopes	1.74	19,250
430	Jayel family, moderately deep-Walnett family, deep-Lithic Xerochrepts, ultramafic association, stony, 35 to 75 percent slopes	5.08	56,050
226	Kistirn-Goldridge families, deep-Deadwood family association, 30 to 70 percent slopes	1.98	21,830
# (101)	Landflow		
	Landslide (each symbol represents 20 acres)		
402	Lithic Haploxerafs, ultramafic-Ishi Pishi family, deep complex, 35 to 70 percent slopes	.21	2,340
425	Lithic Haploxerafs, ultramafic-Walnett family, deep, stony association, 25 to 70 percent slopes	.82	9,080
412	Madden family, moderately deep, 20 to 50 percent slopes	.52	5,800
530	Maymen family, dioritic, 45 to 70 percent slopes	.54	5,940
242	Maymen family-Clallam family, moderately deep, unstable association, 35 to 90 percent slopes	.34	3,710
323	Maymen family-Rock outcrop, metaigneous complex, 70 to 90 percent slopes	.71	7,840
243	Maymen family-Rock outcrop, metasedimentary complex, 60 to 80 percent slopes	.16	1,720
253	Melbourne-Holland families association, deep, 5 to 35 percent slopes	.33	3,660
252	Melbourne-Holland families association, deep, 35 to 70 percent slopes	3.24	35,680
238	Melbourne-Soulajule families association, deep, 5 to 35 percent slopes	.59	6,530
317	Nanny family, moderately deep, 50 to 70 percent slopes	.30	3,000
525	Nanny family, deep, dioritic-Althouse family, deep, stony association, 30 to 70 percent slopes	1.15	12,640
259	Nanny family, deep-Woodseye family-Bins family, deep association, 35 to 70 percent slopes	2.92	32,250
405	Oragran family-Lithic Haploxerafs, ultramafic-Rock outcrop, ultramafic complex, 50 to 70 percent slopes	.61	6,730
403	Oragran family-Weitchpec family, moderately deep-Lithic Haploxerafs, ultramafic complex, 30 to 50 percent slopes	1.15	12,710
404	Oragran family-Weitchpec family, moderately deep-Lithic Haploxerafs, ultramafic complex, 50 to 70 percent slopes	1.33	14,630
250	Oxalis-Hecker-Doty families association, deep, 25 to 70 percent slopes	1.15	12,660
102	Pits-Dump association	.03	280
356	Raisio-Clallam families complex, moderately deep, 45 to 75 percent slopes	.17	1,840
500	Rock outcrop, dioritic	.81	8,950

**Table 4. Map Unit Legend, Area Percent, and Acreage, Alphabetical (continued)**

MAP SYMBOL	MAPPING UNIT NAME	SURVEY AREA%	APPROX. ACREAGE
300	Rock outcrop-Lithic Xerorothents complex, metaigneous, 60 to 90 percent slopes	1.19	13,110
501	Rock outcrop-Maymen family complex, dioritic, 50 to 90 percent slopes	.62	6,810
400	Rock outcrop-Rubble land association, ultramafic, 30 to 90 percent slopes	.37	4,110
503	Rock outcrop, dioritic-Wapal family, moderately deep association, 45 to 75 percent slopes	.61	6,770
235	Skalan family, moderately deep, 25 to 70 percent slopes	.06	710
348	Skalan-Aiken families association, deep, 5 to 40 percent slopes	.53	5,880
230	Skalan-Goldridge families complex, deep, 20 to 65 percent slopes	.54	6,020
210	Skalan-Goldridge-Clallam families association, deep, 20 to 70 percent slopes	.93	10,250
351	Skalan-Holland families association, deep, 20 to 65 percent slopes	.10	1,110
232	Skalan-Hugo families association, deep, 25 to 65 percent slopes	.17	1,890
260	Skalan-Kistirn-Holland families association, deep, 35 to 70 percent slopes	6.68	74,743
241	Skinner-Chenango families association, deep, 25 to 70 percent slopes	.15	1,700
100	Typic Xerofluvents-Riverwash association, 2 to 10 percent slopes	1.23	13,550
550	Wapal family, moderately deep, 35 to 65 percent slopes	.25	2,780
552	Wapal family, moderately deep-Deadman family, deep complex, 35 to 65 percent slopes	.57	6,310
554	Wapal family, moderately deep-Hugo family, deep, dioritic association 20 to 65 percent slopes	.26	2,900
—	Wet meadow (each symbol represents 10 acres)		
103	Xerochrepts-Haploxerults complex, 30 to 70 percent slopes	100.00	4,950
		100.00	1,105,243

**TABLE 5. Conversion Legend for 1966 Orleans Soil Survey Report.**

Orleans 1966 Map Symbol	1980 Report Map Symbol	Orleans 1966 Map Symbol	1980 Report Map Symbol
200W	—	728/3-3	272
400	100	728/3-4	272
700(AR)	500	728 7118 3-2 4-2	327
700(BK)	500	812m/2-3	271
700(BK)R	500	812m/3-3	272
700(BR)	500	812m/3-4	273
700(DF)	# (101)	812m/2R-3	274
700(DH)	102	815m/5-2	222
700(DP)	102	815m/5-3	223
700(DS)		815m/4-2	222
700(DW)	100	815m/2-2	211
700(DZ)	103	820/2-3	212
700(MR)	300	820/2-4	214
700(UR)	400	820/2R-4	214
711/5-1	315	820/2-3M	215
711 7118 5-1 4-2	316	820/2-4M	215
726 724 2-2 4-2	402	926/5-2	125
726 724 2-3 4-2	402	7111/3-1	535
726 7137 2-2 2-2	403	7118/4-1	312
726 7137 2-3 2-3	404	7118/4-2	312
726 7137 2R-3 2R-3	405	7123/4-2	317
728/2-2	320	7129/2R-3	317
728/2-3	321	7129/2-3	515
728/2R-3	323	7129/1R-4	517
728/2R-4	323	7129/2R-4	517
728/3-2	324		

**100 Typic Xerofluvents-Riverwash association  
2 to 10 percent slopes**

Map Unit Components  
Approx. Proportion  
Position, Slope, and  
Elevation  
Typical Vegetation

**Typic Xerofluvents**

(40%)  
Alluvial terraces and fans; 2 to 10; all aspects;  
500 to 4000 ft.  
Annual grass

**Riverwash**

(30%)  
River flood plains; 2 to 10; all aspects; 500 to  
4000 ft.  
Barren

**Soil Profile Description**

Surface Layer

Brown gravelly sandy loam, weak granular  
structure, medium acid

Composed of sand, gravel, cobble, stone, and  
boulder deposits

Subsoil

Substratum

Yellowish brown very gravelly loamy sand,  
single grain, slightly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.),  
Underlying Material

40 to 60+; Mixed alluvium

60+,

Erosion Factor (K)

Onsite Investigations Required

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Onsite Investigations Required

Soil Permeability

Moderate to Rapid

Very rapid

Soil Drainage

Well to excessive

Subject to frequent flooding

Soil Manageability

Class

Onsite Investigations Required

Onsite Investigations Required

Group

Onsite Investigations Required

Onsite Investigations Required

Forest Site Class

Onsite Investigations Required

Onsite Investigations Required

Regeneration Potential

Onsite Investigations Required

Onsite Investigations Required

Available Water  
Capacity (AWC)

Onsite Investigations Required

Onsite Investigations Required

Upper 20 inches

Onsite Investigations Required

Onsite Investigations Required

Susceptibility to  
Burning Damage

Onsite Investigations Required

Onsite Investigations Required

Hydrologic Soil Group

Onsite Investigations Required

Onsite Investigations Required

Unified Soil Class  
Depth Rating

Onsite Investigations Required

Onsite Investigations Required

Potential Failure as  
Road Subgrade

Onsite Investigations Required

Onsite Investigations Required

Seeding  
Recommendations

Onsite Investigations Required

Onsite Investigations Required

Included Areas

30 percent inclusions of Xerochrepts.

## 102 Pits and Dumps

Map Unit Components  
Position, Slope, and  
Elevation  
Typical Vegetation

### Pits and Dumps

Barren to scattered shrubs and trees

### Soil Profile Description

Surface Layer

These areas consist of placer mines located in old terrace deposits of Tertiary river gravels. The gravels and alluvial material were removed in the mining process down to hard underlying rock, leaving highly dissected depressions containing piles of large boulders. These areas have nearly vertical side slopes and flat bottoms. This map unit also consists of gravels, cobbles, and stones piled, somewhat systematically, by the action of gold dredges.

Subsoil  
Substratum

### Soil Properties & Management Interpretations

Rooting Depth (in.),  
Underlying Material

Variable depth; alluvium

Erosion Factor (K)

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Soil Permeability

Onsite Investigations Required

Soil Drainage

Onsite Investigations Required

Soil Manageability

Class

Onsite Investigations Required

Group

Onsite Investigations Required

Forest Site Class

Onsite Investigations Required

Regeneration Potential

Onsite Investigations Required

Available Water  
Capacity (AWC)

Onsite Investigations Required

Upper 20 inches

Onsite Investigation Required

Susceptibility to  
Burning Damage

Onsite Investigations Required

Hydrologic Soil Group

C

Unified Soil Class

Onsite Investigations Required

Depth Rating

Potential Failure as  
Road Subgrade

No

Seeding  
Recommendations

Onsite Investigation Required

**103 Xerochrepts-Haploxerults complex  
30 to 70 percent slopes**

**Map Unit Components**

**Xerochrepts-Haploxerults**

Approx. Proportion

(100%)

Position, Slope, and Elevation

Mountainsides and colluvial mountainsides; 30 to 70; all aspects; 2500 to 4000 ft.

Typical Vegetation

Varies from dense Douglas-fir stands to Jeffrey pine - grass cover.

**Soil Profile Description**

Surface Layer

This map unit occurs in fault zones. Due to the mixture of parent materials, drainage and microrelief, there is great variability in soils. Because of this variability it was impractical to delineate the small areas of soils so the landform itself was made the map unit.

Subsoil

Substratum

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material

Onsite Investigations Required

Erosion Factor (K)

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Soil Permeability

Onsite Investigations Required

Soil Drainage

Onsite Investigations Required

Soil Manageability

Class

Onsite Investigations Required

Group

Onsite Investigations Required

Forest Site Class

Onsite Investigations Required

Regeneration Potential

Onsite Investigations Required

Available Water Capacity (AWC)

Onsite Investigations Required

Upper 20 inches

Onsite Investigations Required

Susceptibility to Burning Damage

Onsite Investigations Required

Hydrologic Soil Group

Onsite Investigations Required

Unified Soil Class  
Depth Rating

Onsite Investigations Required

Potential Failure as Road Subgrade

Onsite Investigations Required

Seeding Recommendations

Onsite Investigations Required

**125 Horseshoe family, deep  
10 to 40 percent slopes**

Map Unit Components	<b>Horseshoe family, deep</b>
Approx. Proportion	(85%)
Position, Slope, and Elevation	Old terrace remnants; 10 to 40; all aspects; 500 to 2000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Yellowish red gravelly loam, moderate subangular blocky structure, slightly acid
Subsoil	Red gravelly clay loam, moderate subangular blocky structure, very strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	60+; Mixed alluvium
Erosion Factor (K)	.20-.32
Max. Erosion Hazard	High
Soil Permeability	Moderately slow
Soil Drainage	Well
Soil Manageability	
Class	2-3E
Group	II
Forest Site Class	2-3
Regeneration Potential	Moderate to High
Available Water Capacity (AWC)	High
Upper 20 inches	2.4 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	B-C
Unified Soil Class	0-13 ML
Depth Rating	13-48 CL 48-76 ML
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	15 percent inclusions of Goldridge and Hugo families, deep and soils similar to Goldridge, deep on 40 to 50 percent slopes.

**200 Rock outcrop, metaigneous-Lithic Xerorthents complex, metaigneous  
60 to 90 percent slopes**

**Map Unit Components**

Approx. Proportion

Position, Slope, and Elevation

Typical Vegetation

**Rock outcrop, metaigneous**

(40%)

Ridges and mountain sideslopes; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.

Barren

**Lithic Xerorthents**

(30%)

Ridges and mountain sideslopes; 60 to 90; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.

Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer

Very gravelly sandy loam, weak granular structure, medium acid

Subsoil

Very gravelly sandy loam, single grain, medium acid

Substratum

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material

10-20; metaigneous and metasedimentary rock

Erosion Factor (K)

Onsite Investigations Required

Max. Erosion Hazard

Onsite Investigations Required

Soil Permeability

Rapid

Soil Drainage

Somewhat excessively

Soil Manageability Class Group

4Gd  
IV

Forest Site Class

6-7

Regeneration Potential

Low

Available Water Capacity (AWC)

Very low

Upper 20 inches

<1.2 inches

Susceptibility to Burning Damage

Onsite Investigations Required

Hydrologic Soil Group

D

C

Unified Soil Class Depth Rating

Onsite Investigations Required

Potential Failure as Road Subgrade

No

No

Seeding Recommendations

Onsite Investigations Required

Included Areas

30 percent inclusions of Raisio family, mod. deep and frigid soils.

**209 Hartleton-Elioak-Chenango families association, deep  
20 to 50 percent slopes**

Map Unit Components	<b>Hartleton family, deep</b>	<b>Elioak family, deep</b>	<b>Chenango family, deep</b>
Approx. Proportion	(30%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 50; all aspects; 500 to 3500 ft.	Benches and gentle mountain sideslopes; 20 to 40; all aspects; 500 3500 ft.	Mountain sideslopes; 40 to 50; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir
<b>Soil Profile Description</b>			
Surface Layer	Light yellowish brown silt loam, strong granular structure, medium acid	Light yellowish brown silt loam, weak to moderate subangular structure, medium acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil	Yellow gravelly to very gravelly silt loam, moderate subangular blocky structure, medium acid	Yellow gravelly silty clay loam, moderate to strong subangular blocky structure, medium acid	Yellowish brown very gravelly clay loam, weak to moderate subangular blocky structure, medium acid
Substratum		Very pale brown very gravelly silt loam, weak subangular blocky structure, medium acid	White gravelly clay loam, weak subangular blocky structure, medium acid
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.49	.20-.32
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to Moderately Slow	Moderate to Moderately Slow	Moderate to Moderately Rapid
Soil Drainage	Well	Well to Moderately Well	Well
Soil Manageability Class	3E	2-3E	3Ep
Group	III	III	III
Forest Site Class	3	2-3	3-4
Regeneration Potential	High	High	Low to Moderate
Available Water Capacity (AWC)	Moderate	Moderate to High	Low to Moderate
Upper 20 inches	2.5 inches	2.9 inches	1.7 inches
Susceptibility to Burning Damage	Low	Low to Moderate	Low
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-21 MH	0-44 ML	0-60 GC
Depth Rating	21-60 ML	44-60 GC	
Potential Failure as Road Subgrade	NO	No	No
Seeding Recommendations	2	3	3
Included Areas	25 percent inclusions of Skinner and Aiken families, deep and Holyoke family.		

**210 Skalan-Goldridge-Clallam families association, deep  
20 to 70 percent slopes**

Map Unit Components	<b>Skalan family, deep</b>	<b>Goldridge family, deep</b>	<b>Clallam family, deep</b>
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Gentle mountain sideslopes, broad ridges; 20 to 55; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Gentle mountain sideslopes, broad ridges; 20 to 35; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 50 to 70 NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid	Dark brown to yellowish brown loam to clay loam, moderate granular structure, strongly to medium acid	Very dark grayish brown very gravelly sandy loam, moderate subangular blocky structure, medium acid
Subsoil	Pink to reddish yellow gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Reddish yellow clay loam, moderate subangular blocky structure, medium acid	Brown to yellowish brown very gravelly loam, mod. to weak subangular blocky structure, strongly to med. acid
Substratum		Red clay loam, massive, medium acid	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.43	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderately slow	Moderately slow	Moderate
Soil Drainage	Well	Well	Well
Soil Manageability Class	2-3Ep	2E	3-4Ep
Soil Manageability Group	III	III	III
Forest Site Class	3-4	2-3	4
Regeneration Potential	Low to Moderate	High	Low
Available Water Capacity (AWC)	Moderate	High	Low to Moderate
Upper 20 inches	1.5 inches	2.7 inches	1.4 inches
Susceptibility to Burning Damage	Low	Low	Moderate
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-12 ML	0-14 ML	0-60 ML,GC
Depth Rating	12-56 GC	14-43 CL	
Potential Failure as Road Subgrade	No	Yes	No
Seeding Recommendations	2	1	1
Included Areas	20 percent inclusions of Hugo and Holland families, deep, Skalan family, mod. deep, and Maymen family.		

**211 Clallam family, moderately deep  
30 to 50 percent slopes**

Map Unit Components	<b>Clallam family, moderately deep</b>
Approx. Proportion	(75%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	Moderate
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3ep
Group	III
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	1.7 inches
Susceptibility to Burning Damage	Moderate
Hydrologic Soil Group	C
Unified Soil Class	0-26 ML,GC
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	25 percent inclusions of Dystric Lithic Xerochrepts, Hugo family, mod. deep, metasedimentary rock outcrop, and Hullt family, deep.

**212 Clallam family, moderately deep  
50 to 70 percent slopes**

Map Unit Components	<b>Clallam family, moderately deep</b>
Approx. Proportion	(75%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4GE
Group	III-IV
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	1.7 inches
Susceptibility to Burning Damage	Moderate to High
Hydrologic Soil Group	C
Unified Soil Class	0-26 ML,GC
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	25 percent inclusions of Lithic Xerorthents, Hugo family, mod. deep, Rock outcrop, metasedimentary, and Hullt family, deep.

**213 Clallam family, moderately deep- Rock outcrop, metasedimentary complex  
70 to 90 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep</b>	<b>Rock outcrop, metasedimentary</b>
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 70 to 90; all aspects; 400 to 4000 ft.	Mountain sideslopes; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

**Soil Profile Description**

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	4GE	
Group	IV	
Forest Site Class	4	
Regeneration Potential	Moderate to Low	
Available Water Capacity (AWC)	Low	
Upper 20 inches	1.7 inches	
Susceptibility to Burning Damage	Moderate to High	
Hydrologic Soil Group	C	D
Unified Soil Class	0-26 ML,GC	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of Lithic Xerorthents and Hugo family, mod. deep.	

**214 Clallam family, moderately deep- Rock outcrop, metasedimentary complex  
70 to 90 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep</b>	<b>Rock outcrop, metasedimentary</b>
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 70 to 90; all aspects; 400 to 4000 ft.	Mountain sideslopes; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

**Soil Profile Description**

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Reddish yellow gravelly loam, moderate subangular blocky structure, slightly acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	4GE	
Group	IV	
Forest Site Class	4	
Regeneration Potential	Moderate to Low	
Available Water Capacity (AWC)	Low	
Upper 20 inches	1.7 inches	
Susceptibility to Burning Damage	Moderate to High	
Hydrologic Soil Group	C	D
Unified Soil Class	0-26 ML,GC	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of Lithic Xerorthents and Hugo family, mod. deep.	

**215 Clallam family, moderately deep, unstable  
50 to 70 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep, unstable</b>
Approx. Proportion	(60%)
Position, Slope, and Elevation	Unstable mountain sideslopes; 50 to 70; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Very pale brown gravelly silty loam, strong subangular blocky structure, strongly acid
Substratum	Pale yellow very gravelly silty clay loam, weak granular structure, strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; Sheared metasedimentary schist
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderately rapid
Soil Drainage	Well to somewhat excessively
Soil Manageability Class	3-4SG
Group	IV
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	2.5 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	C
Unified Soil Class	0-12 ML
Depth Rating	12-36 GC
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	40 percent inclusions of Hugo family, mod. deep, Dystric Lithic Xerochrepts, metasedimentary rock outcrop, and soils similar to Clallam family, mod. deep, unstable, except deep.

**216 Clallam family, moderately deep, unstable  
50 to 70 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep, unstable</b>
Approx. Proportion	(60%)
Position, Slope, and Elevation	Unstable mountain sideslopes; 50 to 70; all aspects; 400 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Very pale brown gravelly silty loam, strong subangular blocky structure, strongly acid
Substratum	Pale yellow very gravelly silty clay loam, weak granular structure, strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; Sheared metasedimentary schist
Erosion Factor (K)	.20-.28
Max. Erosion Hazard	High
Soil Permeability	Moderately rapid
Soil Drainage	Well to somewhat excessively
Soil Manageability Class	3-4SG
Group	IV
Forest Site Class	4
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	2.5 inches
Susceptibility to Burning Damage	High
Hydrologic Soil Group	C
Unified Soil Class	0-12 ML
Depth Rating	12-36 GC
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	40 percent inclusions of Hugo family, mod. deep, Dystric Lithic Xerochrepts, metasedimentary rock outcrop, and soils similar to Clallam family, mod. deep, unstable, except deep.

**220 Hullt-Coyata-Clallam families association, deep  
35 to 70 percent slopes**

Map Unit Components	<b>Hullt family, deep</b>	<b>Coyata family, deep</b>	<b>Clallam family, deep</b>
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 35 to 70; NW to E; 3000 to 4000 ft.	Mountain sideslopes and ridges; 35 to 70; NW to E; 3000 to 4000 ft.	Mountain sideslopes; 35 to 70; NW to E; 3000 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Yellowish brown loam, weak subangular blocky structure, medium acid	Brown very gravelly loam, weak granular structure, medium acid	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid
Subsoil	Pale brown to light yellowish brown loam, weak subangular blocky structure, slightly acid	Light yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid	Very pale brown very gravelly loam, strong subangular blocky structure strongly acid
Substratum		Light brownish gray very gravelly clay loam, massive, strongly acid	Very pale brown extremely gravelly loam to extremely gravelly clay loam, massive, strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Somewhat excessively	Well
Soil Manageability Class	3-4GE	3-4GE	3-4Gp
Group	III	III	III
Forest Site Class	3	3	4
Regeneration Potential	Moderate to High	Moderate	Moderate
Available Water Capacity (AWC)	Moderate	Moderate	Low
Upper 20 inches	2.3 inches	2.2 inches	1.4 inches
Susceptibility to Burning Damage	Low	Moderate	Moderate
Hydrologic Soil Group	B	B	C
Unified Soil Class	0-45 ML	0-35 ML	0-60 ML
Depth Rating		35-51 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Skalan, mod. deep, and soils similar to Coyata and Hullt families, deep, except less than 20 inches deep.		

**221 Hultt-Coyata-Clallam families association, deep, dry  
35 to 70 percent slopes**

Map Unit Components	<b>Hultt family, deep, dry (35%)</b>	<b>Coyata family, deep, dry (25%)</b>	<b>Clallam family, deep, dry (15%)</b>
Approx. Proportion			
Position, Slope, and Elevation	Mountain sideslopes and ridges; 35 to 70; SE to W; 3000 to 4000 ft.	Mountain sideslopes and ridges; 35 to 70; SE to W; 3000 to 4000 ft.	Mountain sideslopes; 35 to 70; SE to W; 3000 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Yellowish brown loam, weak subangular blocky structure, medium acid	Brown very gravelly loam, strong subangular blocky structure, strongly acid	Very pale brown very gravelly loam, moderate subangular blocky structure, strongly acid
Subsoil	Pale brown to light yellowish brown loam, weak subangular blocky structure, slightly acid	Light yellowish brown very gravelly clay loam, moderate subangular blocky structure, slightly acid	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid
Substratum		Light brownish gray very gravelly clay loam, massive, strongly acid	Very pale brown very gravelly loam to very gravelly clay loam, massive, strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Somewhat excessively	Somewhat excessively
Soil Manageability Class	3-4E	3-4E	3-4Ep
Soil Manageability Group	III	III	III
Forest Site Class	4	4	4-5
Regeneration Potential	Moderate	Low	Very Low
Available Water Capacity (AWC)	Moderate	Moderate	Low
Upper 20 inches	2.3 inches	2.2 inches	1.4 inches
Susceptibility to Burning Damage	Moderate	High	High
Hydrologic Soil Group	B	B	C
Unified Soil Class	0-45 ML	0-35 ML	0-60 ML,GC
Depth Rating		35-51 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Skalan family, mod. deep and a dry phase of soils similiar to Coyata and Hultt families except less than 20 inches deep.		

**222 Goldridge family, deep  
30 to 50 percent slopes**

<b>Map Unit Components</b>	<b>Goldridge family, deep</b>
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 1000 to 3000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Light yellowish brown gravelly loam, moderate granular structure, medium acid
Subsoil	Yellow clay loam, moderate subangular blocky structure; medium acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-80; metasedimentary rock
Erosion Factor (K)	.20-.43
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3E
Group	III
Forest Site Class	2-3
Regeneration Potential	High
Available Water Capacity (AWC)	High
Upper 20 inches	2.7 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	C
Unified Soil Class	0-14 ML
Depth Rating	14-43 CL
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	15 percent inclusions of Hugo and Aiken families, deep.

**223 Goldridge family, deep  
50 to 70 percent slopes**

<b>Map Unit Components</b>	<b>Goldridge family, deep</b>
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 1000 to 3000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Light yellowish brown gravelly loam, moderate granular structure, medium acid
Subsoil	Yellow clay loam, moderate subangular blocky structure, medium acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-80; metasedimentary rock
Erosion Factor (K)	.20-.43
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4E
Group	III-IV
Forest Site Class	2-3
Regeneration Potential	High
Available Water Capacity (AWC)	High
Upper 20 inches	2.7 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	C
Unified Soil Class	0-14 ML
Depth Rating	14-43 CL
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	15 percent inclusions of Hugo and Aiken families, deep.

**224 Goldridge family, deep  
30 to 50 percent slopes**

Map Unit Components	<b>Goldridge family, deep</b>
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 1000 to 3000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Light yellowish brown gravelly loam, moderate granular structure, medium acid
Subsoil	Yellow clay loam, moderate subangular blocky structure; medium acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-80; metasedimentary rock
Erosion Factor (K)	.20-.43
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3E
Group	III
Forest Site Class	2-3
Regeneration Potential	High
Available Water Capacity (AWC)	High
Upper 20 inches	2.7 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	C
Unified Soil Class	0-14 ML
Depth Rating	14-43 CL
Potential Failure as Road Subgrade	Yes
Seeding Recommendations	1
Included Areas	15 percent inclusions of Hugo and Aiken families, deep.

**225 Goldridge-Kistirn-Aiken families association, deep  
5 to 70 percent slopes**

Map Unit Components	<b>Goldridge family, deep</b>	<b>Kistirn family, deep</b>	<b>Aiken family, deep</b>
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes and near ridges; 35 to 70; NW to W, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.	Mountain sideslopes and benches; 5 to 40; NW to E, 1000 to 3800 ft.; SE to W, 1000 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
<b>Soil Profile Description</b>			
Surface Layer	Light yellowish brown gravelly loam, moderate granular structure medium acid	Yellowish brown very gravelly loam, weak granular structure, medium acid	Dark brown loam, moderate subangular blocky structure, slightly acid
Subsoil	Light yellowish brown to yellow gravelly clay loam to clay, moderate subangular blocky structure, medium acid	Strong brown very gravelly clay loam, moderate subangular blocky structure, strongly acid	Strong brown clay loam to silt clay loam, moderate angular blocky structure, slightly acid
Substratum			
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.43	.20-.28	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately slow	Moderate to slow	Moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4E	3-4E	2-3E
Soil Manageability Group	III	III	III
Forest Site Class	2-3	3-4	3
Regeneration Potential	High	Moderate	High
Available Water Capacity (AWC)	Moderate to High	Moderate	High
Upper 20 inches	2.7 inches	1.9 inches	3.2 inches
Susceptibility to Burning Damage	Low	Moderate	Low
Hydrologic Soil Group	C	C	B
Unified Soil Class	0-14 ML	0-53 ML	0-7 CL
Depth Rating	14-43 CL	53-79 GC	7-67 CL,MH
Potential Failure as Road Subgrade	Yes	No	Yes
Seeding Recommendations	1	1	1
Included Areas	20 percent inclusions of Clallam family, deep and Deadwood family.		

**226 Kistirn-Goldridge families, deep -Deadwood family association  
30 to 70 percent slopes**

Map Unit Components	<b>Kistirn family, deep</b>	<b>Goldridge family, deep</b>	<b>Deadwood family</b>
Approx. Proportion	(30%)	(20%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 60; NW to E, 2000 to 3800 ft.; SE to W, 2000 to 4500 ft.	Mountain sideslopes and near ridges; 30 to 60; NW to E, 2000 to 3800 ft.; SE to W, 2000 to 4500 ft.	Ridges; 40 to 70; NW to E, 2000 to 3800 ft.; SE to W, 2000 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Canyon live Oak
<b>Soil Profile Description</b>			
Surface Layer	Yellowish brown very gravelly loam, weak granular structure, medium acid	Light yellowish brown gravelly loam, moderate granular structure, medium acid	Light gray to very pale brown gravelly loam, weak granular structure, medium acid
Subsoil	Strong brown very gravelly clay loam, moderate subangular blocky structure, strongly acid	Light yellowish brown to yellow gravelly clay loam to clay, moderate subangular blocky structure, medium acid	Very pale brown gravelly loam, weak subangular blocky structure, medium acid
Substratum			
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock	20; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.43	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately slow	Moderate to rapid
Soil Drainage	Well	Well	Well to somewhat excessively
Soil Manageability Class	3E	3E	3-4Ep
Soil Manageability Group	III	III	III
Forest Site Class	3-4	2-3	5-6
Regeneration Potential	Moderate	High	Low
Available Water Capacity (AWC)	Moderate	Moderate to High	Low
Upper 20 inches	1.9 inches	2.7 inches	1.7 inches
Susceptibility to Burning Damage	Moderate	Low	High
Hydrologic Soil Group	C	C	D
Unified Soil Class	0-53 ML	0-14 ML	0-9 ML
Depth Rating	53-79 CL	14-43 CL	9-16 GC
Potential Failure as Road Subgrade	No	Yes	No
Seeding Recommendations	1	1	1
Included Areas	30 percent inclusions of Clallam and Hugo families, mod. deep and soils similiar to Kistirn family, deep, except stony.		

**227 Elioak-Hartleton-Aiken families association, deep  
15 to 50 percent slopes**

Map Unit Components	<b>Elioak family, deep</b>	<b>Hartleton family, deep</b>	<b>Aiken family, deep</b>
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 15 to 40; all aspects; 500 to 3500 ft.	Mountain sideslopes; 15 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes and benches; 15 to 40; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir
<b>Soil Profile Description</b>			
Surface Layer	Light yellowish brown silt loam, weak to moderate subangular blocky structure, medium acid	Light yellowish brown silt loam, granular structure, medium acid	Dark brown loam, moderate subangular blocky structure, medium acid
Subsoil	Yellow gravelly silty clay loam, moderate to strong subangular blocky structure, medium acid	Yellow gravelly to very gravelly silt loam, moderate subangular blocky structure, medium acid	Strong brown silty clay loam to silty clay, moderate subangular blocky to angular blocky structure, slightly acid
Substratum	Very pale brown very gravelly silt loam, weak subangular blocky structure, medium acid		
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	60+; metasedimentary rock
Erosion Factor (K)	.20-.49	.20-.28	.20-.37
Max. Erosion Hazard	Very High	High	High
Soil Permeability	Moderate to moderately slow	Moderate to moderately slow	Moderately slow to slow
Soil Drainage	Well to moderately well	Well to moderately well	Well
Soil Manageability Class	2-3E	2-3E	2-3E
Group	II	II	II
Forest Site Class	2-3	3	3
Regeneration Potential	High	High	Moderate to High
Available Water Capacity (AWC)	Moderate to High	Moderate	High to Very High
Upper 20 inches	2.9 inches	2.5 inches	3.2 inches
Susceptibility to Burning Damage	Low	Low	Moderate
Hydrologic Soil Group	C	B-C	B-C
Unified Soil Class	0-44 ML	0-21 MH	0-7 CL
Depth Rating	44-60 GC	21-60 ML	7-67 CL, MH
Potential Failure as Road Subgrade	Yes	No	Yes
Seeding Recommendations	3	2	1
Included Areas	20 percent inclusions of Chenango and Skinner families, deep and Holyoke family.		

**228 Hartleton-Elioak families, deep-Holyoke family association  
30 to 70 percent slopes**

Map Unit Components	<b>Hartleton family, deep</b>	<b>Elioak family, deep</b>	<b>Holyoke family</b>
Approx. Proportion	(35%)	(15%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 40 to 60; all aspects; 500 to 3500 ft.	Mountain sideslopes; 30 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes; 50 to 70; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Rewood - Douglas-fir	Rewood - Douglas-fir
<b>Soil Profile Description</b>			
Surface Layer	Light yellowish brown silt loam, strong granular structure, medium acid	Light yellowish brown silt loam, weak to moderate subangular blocky structure, medium acid	Yellowish brown gravelly silt loam, weak to moderate granular structure, medium acid
Subsoil	Yellow gravelly to very gravelly silt loam, moderate subangular blocky structure, medium acid	Yellow gravelly silty clay loam, moderate to strong subangular blocky structure, medium acid	Light yellowish brown to lt. gray gravelly silt loam, moderate to strong subang. blocky structure, med. to strongly acid
Substratum		Very pale brown very gravelly silt loam, weak subangular blocky structure, medium acid	
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.49	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately slow	Moderate to moderately slow	Moderate
Soil Drainage	Well to Moderately Well	Well to Moderately Well	Well
Soil Manageability Class	3E	3E	3Ed
Group	III	III	III
Forest Site Class	3	2-3	4
Regeneration Potential	High	High	Moderate
Available Water Capacity (AWC)	Moderate	Moderate to High	Very low to low
Upper 20 inches	2.5 inches	2.9 inches	2.5 inches
Susceptibility to Burning Damage	Low	Low	Moderate
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-21 MH	0-44 ML	0-19 ML
Depth Rating	21-60 ML	44-60 GC	
Potential Failure as Road Subgrade	No	Yes	No
Seeding Recommendations	2	3	3
Included Areas	30 percent inclusions of Chenango and Skinner families, deep, soils similar to Hartleton family, deep except stony, and soils similar to Holyoke family, except skeletal.		

**230 Skalan-Goldridge families complex, deep  
20 to 65 percent slopes**

Map Unit Components	<b>Skalan family, deep</b>	<b>Goldridge family, deep</b>
	Approx. Proportion	(40%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 65; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes and broad ridges; 20 to 45; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
<b>Soil Profile Description</b>		
Surface Layer	Very dark gray to brown gravelly loam, weak granular structure, strongly acid	Light yellowish brown to yellow gravelly loam to clay loam, medium granular structure, strongly to medium acid
Subsoil	Dark reddish brown gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Yellow gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum		
<b>Soil Properties &amp; Management Interpretations</b>		
Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-80; metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.43
Max. Erosion Hazard	High	High
Soil Permeability	Moderately slow	Moderate to moderately slow
Soil Drainage	Well	Well
Soil Manageability Class	3-4Ep	2-3E
Group	III	III
Forest Site Class	3-4	2-3
Regeneration Potential	Low	High
Available Water Capacity (AWC)	Low	High
Upper 20 inches	1.5 inches	2.7 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	C	C
Unified Soil Class	0-12 ML	0-14 ML
Depth Rating	12-56 GC	14-43 CL
Potential Failure as Road Subgrade	No	Yes
Seeding Recommendations	2	1
Included Areas	25 percent inclusions of Skalan family, mod. deep and Hugo family, deep and mod. deep.	

**231 Goldridge family, deep  
15 to 30 percent slopes**

<b>Map Unit Components</b>	<b>Goldridge family, deep</b>
<b>Approx. Proportion</b>	(85%)
<b>Position, Slope, and Elevation</b>	Mountain sideslopes and broad ridges; 15 to 30; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
<b>Typical Vegetation</b>	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

<b>Surface Layer</b>	Light yellowish brown to yellow gravelly loam to clay loam, moderately granular structure; strongly to medium acid
<b>Subsoil</b>	Yellow gravelly clay loam, moderate subangular blocky structure, medium acid
<b>Substratum</b>	

**Soil Properties & Management Interpretations**

<b>Rooting Depth (in.), Underlying Material</b>	40-80; metasedimentary rock
<b>Erosion Factor (K)</b>	.20-.43
<b>Max. Erosion Hazard</b>	Moderate
<b>Soil Permeability</b>	Moderately slow
<b>Soil Drainage</b>	Well
<b>Soil Manageability</b>	
Class	1
Group	I
<b>Forest Site Class</b>	2-3
<b>Regeneration Potential</b>	High
<b>Available Water Capacity (AWC)</b>	High
Upper 20 inches	2.7 inches
<b>Susceptibility to Burning Damage</b>	Low
<b>Hydrologic Soil Group</b>	C
<b>Unified Soil Class</b>	0-14 ML
<b>Depth Rating</b>	14-43 CL
<b>Potential Failure as Road Subgrade</b>	Yes
<b>Seeding Recommendations</b>	1
<b>Included Areas</b>	15 percent inclusions of Skalan and Hugo families, deep.

**232 Skalan-Hugo families association, deep  
25 to 65 percent slopes**

Map Unit Components	<b>Skalan family, deep</b>	<b>Hugo family, deep</b>
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Upper portions of mountain sideslopes; 25 to 40; NW to E. 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 35 to 65; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Very dark gray to pale brown gravelly loam, weak granular structure, strongly acid	Yellowish brown gravelly heavy loam, weak granular structure, medium acid
Subsoil	Dark reddish brown gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid
Substratum		

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-60; metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderately slow	Moderately slow
Soil Drainage	Well	Well
Soil Manageability Class	2-3Ep	3-4E
Group	III	III
Forest Site Class	3-4	3
Regeneration Potential	Moderate	Moderate to High
Available Water Capacity (AWC)	Moderate	Moderate
Upper 20 inches	1.5 inches	3.0 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	C	C
Unified Soil Class	0-12 ML	0-40 ML
Depth Rating	12-56 GC	40-60 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	2	1
Included Areas	20 percent inclusions of Skalan family, mod. deep and Goldridge family, deep.	

**235 Skalan family, moderately deep  
25 to 70 percent slopes**

Map Unit Components	<b>Skalan family, mod. deep</b>
Approx. Proportion	(80%)
Position, Slope, and Elevation	Mountain sideslopes; 25 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Light reddish brown gravelly loam, weak subangular blocky structure, strongly acid
Subsoil	Yellowish red to reddish brown gravelly to very gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.20-.37
Max. Erosion Hazard	High
Soil Permeability	Moderately slow
Soil Drainage	Well
Soil Manageability	
Class	3-4Ep
Group	III
Forest Site Class	3-4
Regeneration Potential	Low to Moderate
Available Water Capacity (AWC)	Low
Upper 20 inches	2.2 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	C
Unified Soil Class	0-34 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	2
Included Areas	20 percent inclusions of soils similar to Skalan family, mod. deep except less than 20 inches deep.

**236 Doty-Hecker families association, deep  
25 to 70 percent slopes**

Map Unit Components	<b>Doty family, deep</b>	<b>Hecker family, deep</b>
Approx. Proportion	(40%)	(40%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 25 to 45; SE to W; 1000 to 4000 ft.	Mountain sideslopes; 40 to 70; all aspects; 1000 to 4000 ft.
Typical Vegetation	Oregon White Oak	Oregon White Oak

**Soil Profile Description**

Surface Layer	Brown heavy loam, strong subangular blocky structure breaking to moderate granular, neutral	Pale brown gravelly loam, moderate granular structure, slightly acid
Subsoil	Brown to pale brown clay loam, moderate subangular blocky structure, neutral to slightly acid	Light brownish gray very gravelly clay loam, moderate subangular blocky structure, neutral
Substratum		

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.37	.24-.43
Max. Erosion Hazard	Moderate	High
Soil Permeability	Moderate to moderately slow	Moderate
Soil Drainage	Well to moderately well	Well
Soil Manageability Class	2-3e	3-4E
Group	III	III
Forest Site Class	4(Estimated)	4(Estimated)
Regeneration Potential	Moderate	Moderate
Available Water Capacity (AWC)	Moderate to High	Moderate to High
Upper 20 inches	3.3 inches	2.2 inches
Susceptibility to Burning Damage	Low to moderate	Low
Hydrologic Soil Group	B-C	B-C
Unified Soil Class	0-25 OL	0-13 ML
Depth Rating	25-60 ML	13-60 GC
Potential Failure as Road Subgrade	Yes	No
Seeding Recommendations	3	1
Included Areas	20 percent inclusions of Oxalis, Melbourne, and Soulajule families, deep.	

**237 Clallam family, mod. deep, unstable-Melbourne family, deep association  
35 to 70 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep, unstable</b>	<b>Melbourne family, deep</b>
Approx. Proportion	(40%)	(25%)
Position, Slope, and Elevation	Unstable mountain sideslopes; 35 to 70; NW to E; 1000 to 4000 ft.	Broad ridges and mountain sideslopes; 35 to 50; all aspects; 1000 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, moderate granular structure, slightly to medium acid	Pale brown clay loam, strong granular structure, slightly acid
Subsoil	Very pale brown to pale brown loam, moderate to strong subangular blocky structure, medium acid	Light yellowish brown gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum	Pale yellow very gravelly clay loam, weak granular structure, strongly acid	Grayish brown very gravelly heavy clay loam to clay, massive, medium acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; Schist and fractured shale	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.28	.28-.55
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well to moderately well
Soil Manageability Class	3-4E	3E
Group	III	III
Forest Site Class	4	3
Regeneration Potential	Moderate	High
Available Water Capacity (AWC)	Low to Moderate	High
Upper 20 inches	2.5 inches	3.2 inches
Susceptibility to Burning Damage	Moderate	Low
Hydrologic Soil Group	B-C	C
Unified Soil Class	0-12 ML	0-45 ML
Depth Rating	12-36 GC	
Potential Failure as Road Subgrade	No	Yes
Seeding Recommendations	1	1
Included Areas	35 percent inclusions of SoulaJule and Holland families, deep and soils similar to Clallam family, mod. deep, unstable, except deep.	

**238 Melbourne-Soulajule families association, deep  
5 to 35 percent slopes**

Map Unit Components	<b>Melbourne family, deep</b>	<b>Soulajule family, deep</b>
Approx. Proportion	(40%)	(30%)
Position, Slope, and Elevation	Mountain sideslopes and benches; 5 to 35; NW to E, 2000 to 4500 ft.; SE to W, 2000 to 4800 ft.	Mountain sideslopes; 5 to 35; NW to E, 2000 to 4500 ft.; SE to W, 2000 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown clay loam, strong granular structure, slightly acid	Brown gravelly loam, moderate granular structure, slightly acid
Subsoil	Light yellowish brown heavy clay loam, moderate subangular blocky structure, medium acid	Light yellowish brown very gravelly heavy clay loam, moderate subangular blocky structure, medium acid
Substratum	Grayish brown very gravelly heavy clay loam to clay, massive, medium acid	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.28-.55	.24-.43
Max. Erosion Hazard	Moderate	Moderate
Soil Permeability	Moderate	Moderate
Soil Drainage	Well to moderately well	Well to moderately well
Soil Manageability Class	2e	2p
Group	II	II
Forest Site Class	3	4
Regeneration Potential	High	Low to Moderate
Available Water Capacity (AWC)	High	Moderate
Upper 20 inches	3.2 inches	1.9 inches
Susceptibility to Burning Damage	Low	Moderate
Hydrologic Soil Group	C	C
Unified Soil Class	0-45 ML	0-13 ML
Depth Rating		13-60 GC
Potential Failure as Road Subgrade	Yes	Yes
Seeding Recommendations	1	3
Included Areas	35 percent inclusions of Holland, Aiken, and Goldridge families, deep and soils similar to Melbourne and Soulajule families, deep, except on greater than 35 percent slopes.	

**240 Hugo family, deep-Clallam family, moderately deep association  
25 to 70 percent slopes**

Map Unit Components	<b>Hugo family, deep</b>	<b>Clallam family, moderately deep</b>
Approx. Proportion	(40%)	(35%)
Position, Slope, and Elevation	Upper mountain sideslopes and broad ridges; 25 to 45; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 50 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone
<b>Soil Profile Description</b>		
Surface Layer	Yellowish brown gravelly heavy loam, weak granular structure, medium acid	Brown very gravelly loam, moderate subangular blocky structure, medium acid
Subsoil	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid
Substratum		
<b>Soil Properties &amp; Management Interpretations</b>		
Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28
Max. Erosion Hazard	Moderate	High
Soil Permeability	Moderate	Moderately rapid
Soil Drainage	Well	Well
Soil Manageability Class	2-3e	3-4E
Group	III	III
Forest Site Class	3	4
Regeneration Potential	Moderate to High	Low to Moderate
Available Water Capacity (AWC)	Moderate	Low
Upper 20 inches	3.0 inches	1.7 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	C	B
Unified Soil Class	0-40 ML	0-26 ML,GC
Depth Rating	40-60 GC	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Skalan and Goldridge families, deep and Maymen family.	

**241 Skinner-Chenango families association, deep  
25 to 70 percent slopes**

Map Unit Components	<b>Skinner family, deep</b>	<b>Chenango family</b>
Approx. Proportion	(45%)	(40%)
Position, Slope, and Elevation	Mountain sideslopes; 25 to 45; all aspects; 500 to 3500 ft.	Mountain sideslopes; 45 to 70; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir

**Soil Profile Description**

Surface Layer	Very pale brown gravelly loam, moderate subangular blocky structure, strongly acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil	Very pale brown to pale yellow clay loam, strong subangular blocky structure, strongly to medium acid	Yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid
Substratum	Pale yellow gravelly sandy loam, weak subangular blocky structure, medium acid	White gravelly clay loam, moderate subangular blocky structure, medium acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.32	.20-.32
Max. Erosion Hazard	High	High
Soil Permeability	Moderate to moderately slow	Moderate to moderately slow
Soil Drainage	Well to moderately well	Well
Soil Manageability Class	2-3E	3-4Ep
Group	III	III
Forest Site Class	2-3	3-4
Regeneration Potential	High	Low to Moderate
Available Water Capacity (AWC)	Moderate to High	Low to Moderate
Upper 20 inches	3.2 inches	1.7 inches
Susceptibility to Burning Damage	Low	Low to Moderate
Hydrologic Soil Group	B-C	B-C
Unified Soil Class	0-32 ML	0-60 GC
Depth Rating	32-56 GC	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	3
Included Areas	15 percent inclusions of Hartleton and Elioak families, deep and Holyoke family.	

**242 Maymen family-Clallam family, mod. deep, unstable association  
35 to 90 percent slopes**

Map Unit Components	<b>Maymen family</b>	<b>Clallam family, mod. deep, unstable</b>
Approx. Proportion	(40%)	(35%)
Position, Slope, and Elevation	Narrow ridges and mountain sideslopes; 35 to 90; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Unstable mountain sideslopes; 45 to 90; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid	Grayish brown gravelly loam, strong to moderate granular structure, medium acid
Subsoil	Very pale brown gravelly loam, weak subangular blocky structure, medium acid	Very pale to light yellowish brown very gravelly loam, moderate to strong subangular blocky structure, strongly to medium acid
Substratum		

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	10-20; metasedimentary rock	20-40; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Somewhat excessively	Well
Soil Manageability Class	3-4Gd	3-4GE
Group	IV	IV
Forest Site Class	5	4
Regeneration Potential	Low	Moderate
Available Water Capacity (AWC)	Very Low	Low
Upper 20 inches	1.9 inches	2.5 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	C	B
Unified Soil Class	0-13 ML	0-12 ML
Depth Rating		12-36 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Deadwood family, Hugo family, mod. deep, and soils similar to Clallam family, mod. deep, unstable, except deep.	

**243 Maymen family-Rock outcrop, metasedimentary complex  
60 to 80 percent slopes**

Map Unit Components	<b>Maymen family</b>	<b>Rock outcrop, metasedimentary</b>
Approx. Proportion	(45%)	(40%)
Position, Slope, and Elevation	Upper mountain sideslopes; 60 to 80; NW to E; 600 to 4500 ft.	Mountain sideslopes and inner gorges; SE to W; 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Very pale brown gravelly loam, weak subangular blocky structure, medium acid
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	10-20; metasedimentary rock	
Erosion Factor (K)	.20-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Somewhat excessively	
Soil Manageability Class	4GE	
Group	IV	
Forest Site Class	5	
Regeneration Potential	Low	
Available Water Capacity (AWC)	Very low	
Upper 20 inches	1.9 inches	
Susceptibility to Burning Damage	Moderate	
Hydrologic Soil Group	C	D
Unified Soil Class	0-18 ML	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	15 percent inclusions of Deadwood family and colluvial material.	

**244 Chenango-Skinner families, deep-Holyoke family association  
35 to 80 percent slopes**

Map Unit Components	<b>Chenango family, deep</b>	<b>Skinner family, deep</b>	<b>Holyoke family</b>
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; all aspects; 500 to 3500 ft.	Mountain sideslopes; 35 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes; 50 to 80; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir
<b>Soil Profile Description</b>			
Surface Layer	Pale brown very gravelly loam, moderate granular structure, strongly acid	Very pale brown gravelly loam, moderate subangular blocky structure, strongly acid	Yellowish brown gravelly silt loam, weak to moderate granular structure, strongly acid
Subsoil	Yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid	Very pale brown to pale yellow clay loam, strong subangular blocky structure, strongly to medium acid	Light yellowish brown to light gray gravelly silt loam, moderate to strong subangular blocky structure, medium acid
Substratum	White very gravelly clay loam, moderate subangular blocky structure, medium acid	Pale yellow gravelly sandy loam, weak subangular blocky structure, medium acid	
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.32	.20-.32	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately rapid	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Well to moderately well	Well
Soil Manageability Class	3-4Ep	3E	4GE
Soil Manageability Group	III	III	III
Forest Site Class	3-4	2-3	4
Regeneration Potential	Low to moderate	High	Moderate
Available Water Capacity (AWC)	Low to moderate	Moderate	Very low
Upper 20 inches	1.7 inches	3.2 inches	2.5 inches
Susceptibility to Burning Damage	Low to moderate	Low	Moderate
Hydrologic Soil Group	B-C	B-C	B-C
Unified Soil Class	0-60 GC	0-32 ML	0-19 ML
Depth Rating		32-56 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	1	3
Included Areas	25 percent inclusions of Hartleton and Elioak families, deep and soils similar to Holyoke family, except skeletal.		

**245 Clallam family, moderately deep-Hugo family, deep-Maymen family association  
35 to 70 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep</b>	<b>Hugo family, deep</b>	<b>Maymen family</b>
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mid-mountain sideslopes along drainages; 50 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Upper mountain sideslopes and benchy areas; 35 to 50; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 55 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid	Yellowish brown gravelly loam, weak granular structure, medium acid	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid	Very pale brown gravelly loam weak subangular blocky structure, medium acid
Substratum			

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderately slow	Moderate
Soil Drainage	Well	Well	Somewhat excessively
Soil Manageability Class	3-4Ep	3E	4Ed
Group	IV	IV	IV
Forest Site Class	4	3	5
Regeneration Potential	Low to moderate	Moderate to high	Low
Available Water Capacity (AWC)	Low	Moderate	Very low
Upper 20 inches	1.7 inches	3.0 inches	1.9 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	C	C
Unified Soil Class	0-26 ML,GC	0-40 ML	0-18 ML
Depth Rating		40-60 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	20 percent inclusions of Deadwood family, Skalan family, mod. deep, Goldridge family, deep, and others soils on greater than 70 percent slopes.		

**246 Clallam family, moderately deep-Maymen family association  
45 to 80 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep</b>	<b>Maymen family</b>
Approx. Proportion	(40%)	(35%)
Position, Slope, and Elevation	Mid-mountain sideslopes; 45 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 65 to 80; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid	Very pale brown gravelly loam, weak subangular blocky structure, medium acid
Substratum		

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Somewhat excessively
Soil Manageability Class	3-4Ep	4Gd
Group	IV	IV
Forest Site Class	4	5
Regeneration Potential	Low to moderate	Low
Available Water Capacity (AWC)	Low	Very low
Upper 20 inches	1.7 inches	1.9 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	B-C	C
Unified Soil Class	0-26 ML,GC	0-18 ML
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Rock outcrop, metasedimentary, Deadwood family, Hugo family, mod. deep, and soils on greater than 80 percent slopes.	

**247 Clallam family, moderately deep-Hugo family, deep-Maymen family association  
35 to 70 percent slopes**

Map Unit Components	<b>Clallam family, mod. deep</b>	<b>Hugo family, deep</b>	<b>Maymen family</b>
Approx. Proportion	(35%)	(25%)	(20%)
Position, Slope, and Elevation	Mid-mountain sideslopes along drainages; 50 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Upper mountain sideslopes and benchy areas; 35 to 50; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Mountain sideslopes; 55 to 70; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Brown very gravelly loam, moderate subangular blocky structure, medium acid	Yellowish brown gravelly loam, weak granular structure, medium acid	Pale brown gravelly loam, moderate granular structure, medium acid
Subsoil	Reddish yellow very gravelly loam, moderate to weak subangular blocky structure, slightly to medium acid	Light yellowish brown to pale yellow heavy silt loam to yellow clay loam, moderate subangular blocky structure, medium acid	Very pale brown gravelly loam weak subangular blocky structure, medium acid
Substratum			

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderately slow	Moderate
Soil Drainage	Well	Well	Somewhat excessively
Soil Manageability Class	3-4Ep	3E	4Ed
Group	IV	IV	IV
Forest Site Class	4	3	5
Regeneration Potential	Low to moderate	Moderate to high	Low
Available Water Capacity (AWC)	Low	Moderate	Very low
Upper 20 inches	1.7 inches	3.0 inches	1.9 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	C	C
Unified Soil Class	0-26 ML,GC	0-40 ML	0-18 ML
Depth Rating		40-60 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	20 percent inclusions of Deadwood family, Skalan family, mod. deep, Goldridge family, deep, and others soils on greater than 70 percent slopes.		

**248 Chenango-Skinner families, deep-Holyoke family association  
35 to 80 percent slopes**

Map Unit Components	<b>Chenango family, deep</b>	<b>Skinner family, deep</b>	<b>Holyoke family</b>
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; all aspects; 500 to 3500 ft.	Mountain sideslopes; 35 to 50; all aspects; 500 to 3500 ft.	Mountain sideslopes; 50 to 80; all aspects; 500 to 3500 ft.
Typical Vegetation	Redwood - Douglas-fir	Redwood - Douglas-fir	Redwood - Douglas-fir

**Soil Profile Description**

Surface Layer	Pale brown very gravelly loam, moderate granular structure, strongly acid	Very pale brown gravelly loam, moderate subangular blocky structure, strongly acid	Yellowish brown gravelly silt loam, weak to moderate granular structure, strongly acid
Subsoil	Yellowish brown very gravelly clay loam, moderate subangular blocky structure, medium acid	Very pale brown to pale yellow clay loam, strong subangular blocky structure, strongly to medium acid	Light yellowish brown to light gray gravelly silt loam, moderate to strong subangular blocky structure, medium acid
Substratum	White very gravelly clay loam, moderate subangular blocky structure, medium acid	Pale yellow gravelly sandy loam, weak subangular blocky structure, medium acid	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60; metasedimentary rock	40-60; metasedimentary rock	10-20; metasedimentary rock
Erosion Factor (K)	.20-.32	.20-.32	.20-.37
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate to moderately rapid	Moderate to moderately rapid	Moderate
Soil Drainage	Well	Well to moderately well	Well
Soil Manageability Class	3-4Ep	3E	4GE
Group	III	III	III
Forest Site Class	3-4	2-3	4
Regeneration Potential	Low to moderate	High	Moderate
Available Water Capacity (AWC)	Low to moderate	Moderate	Very low
Upper 20 inches	1.7 inches	3.2 inches	2.5 inches
Susceptibility to Burning Damage	Low to moderate	Low	Moderate
Hydrologic Soil Group	B-C	B-C	B-C
Unified Soil Class	0-60 GC	0-32 ML	0-19 ML
Depth Rating		32-56 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	1	3
Included Areas	25 percent inclusions of Hartleton and Elioak families, deep and soils similar to Holyoke family, except skeletal.		

**250 Oxalis-Hecker-Doty families association, deep  
25 to 70 percent slopes**

Map Unit Components	<b>Oxalis family, deep</b>	<b>Hecker family, deep</b>	<b>Doty family, deep</b>
Approx. Proportion	(35%)	(20%)	(15%)
Position, Slope, and Elevation	Hummocky mountain sideslopes; 25 to 70; NW to E, 2000 to 4500 ft. ; SE to W, 2000 to 4800 ft.	Convex mountain sideslopes; 25 to 70; NW to E, 2000 to 4500 ft.; SE to W, 2000 to 4800 ft.	Concave mountain sideslopes and foot slopes; 25 to 70; NW to E, 2000 to 4500 ft. SE to W, 2000 to 4800 ft.
Typical Vegetation	Annual grass	Oregon white oak	Oregon white oak
<b>Soil Profile Description</b>			
Surface Layer	Light brownish gray silty clay, strong subangular blocky structure, slightly acid	Pale brown gravelly heavy loam, strong granular structure, slightly acid	Brown loam, moderate granula structure, neutral
Subsoil	Light brownish gray silty clay, weak subangular blocky structure to massive, slightly acid to neutral	Grayish brown very gravelly clay loam, moderate to strong subangular blocky structure, medium to slightly acid	Yellowish brown to brown ligh clay loam, moderate to strong subangular blocky structure, slightly acid
Substratum	Variegated pale olive and dark gray silty clay, weak subangular blocky structure to massive, neutral		
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60+; Sheared shaley sediments	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.32-.49	.24-.43	.20-.37
Max. Erosion Hazard	Very High	High	High
Soil Permeability	Moderately slow to slow	Moderate	Moderate
Soil Drainage	Poorly	Well to moderately well	Well
Soil Manageability Class	3-4EW	3-4Ep	3-4E
Group	III	III	III
Forest Site Class	Not Commercial	4 (Estimated)	4 (Estimated)
Regeneration Potential	Low to Moderate	Moderate	High
Available Water Capacity (AWC)	Moderate to high	Moderate	Moderate
Upper 20 inches	3.8 inches	2.2 inches	3.3 inches
Susceptibility to Burning Damage	Moderate	Moderate	Low
Hydrologic Soil Group	C	B-C	B
Unified Soil Class	0-60 CH	0-13 ML 13-60 GC	0-25 ML 25-60 ML
Depth Rating			
Potential Failure as Road Subgrade	Yes	No	Yes
Seeding Recommendations	1	1	3
Included Areas	30 percent inclusions of Melbourne family, deep, Deadwood family, and similar soils except mod. deep.		

**252 Melbourne-Holland families association, deep  
35 to 70 percent slopes**

Map Unit Components	Melbourne family, deep	Holland family, deep
Approx. Proportion	(40%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 50; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.	Mountain sideslopes; 35 to 70; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown clay loam, granular structure, slightly acid	Pale brown gravelly loam, moderate granular structure, strongly acid
Subsoil	Light yellowish brown gravelly heavy clay loam, moderate subangular blocky structure, medium acid	Strong brown loam to gravelly loam, moderate to strong subangular blocky structure, strongly acid
Substratum	Grayish brown very gravelly heavy clay loam to clay, massive, medium acid	Reddish yellow very gravelly loam, massive, medium acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.28-.55	.20-.28
Max. Erosion Hazard	High	High
Soil Permeability	Moderate	Moderate
Soil Drainage	Well to moderately well	Well to moderately well
Soil Manageability Class	3E	3-4GE
Group	III	III
Forest Site Class	3	3
Regeneration Potential	High	High
Available Water Capacity (AWC)	High	Moderate to high
Upper 20 inches	3.2 inches	2.1 inches
Susceptibility to Burning Damage	Low	Moderate
Hydrologic Soil Group	C	B-C
Unified Soil Class	0-45 ML	0-60 ML
Depth Rating		
Potential Failure as Road Subgrade	Yes	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Voorhies family, mod. deep, and Goldridge and Soulajule families, deep.	

**253 Melbourne-Holland families association, deep  
5 to 35 percent slopes**

Map Unit Components	<b>Melbourne family, deep</b>	<b>Holland family, deep</b>
Approx. Proportion	(45%)	(25%)
Position, Slope, and Elevation	Mountain sideslopes and benches; 5 to 35; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.	Mountain sideslopes and benches; 5 to 35; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown clay loam, strong granular structure, slightly acid	Pale brown gravelly loam, moderate granular structure, strongly acid
Subsoil	Light yellowish brown gravelly heavy clay loam, moderate subangular blocky structure, medium acid	Strong brown loam to gravelly loam, moderate to strong subangular blocky structure, strongly acid
Substratum	Grayish brown very gravelly heavy clay loam to clay, massive, medium acid	Reddish yellow very gravelly loam, massive, medium acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.28-.55	.20-.28
Max. Erosion Hazard	Moderate to high	Moderate to high
Soil Permeability	Moderate	Moderate
Soil Drainage	Well to moderately well	Well
Soil Manageability Class	2e	2e
Group	II	II
Forest Site Class	3	3
Regeneration Potential	High	High
Available Water Capacity (AWC)	High	Moderate to high
Upper 20 inches	3.2 inches	2.1 inches
Susceptibility to Burning Damage	Low	Moderate
Hydrologic Soil Group	C	B-C
Unified Soil Class	0-45 ML	0-60 ML
Depth Rating		
Potential Failure as Road Subgrade	Yes	No
Seeding Recommendations	1	1
Included Areas	30 percent inclusions of Skalan family, mod. deep, and Goldridge and Soulajule families, deep.	

**254 Deadwood-Skymor families association  
35 to 70 percent slopes**

	<b>Deadwood family</b>	<b>Skymor family</b>
Map Unit Components	(45%)	(20%)
Approx. Proportion		
Position, Slope, and Elevation	Convex mountain sideslopes; 35 to 70; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.	Convex mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.
Typical Vegetation	Annual grass	Annual grass

**Soil Profile Description**

Surface Layer	Very pale brown very gravelly loam, weak granular structure, medium acid	Dark grayish brown gravelly loam, moderate subangular blocky structure, slightly acid
Subsoil	Very pale brown very gravelly loam, weak subangular blocky structure, medium acid	Grayish brown very gravelly loam, moderate subangular blocky structure, slightly acid
Substratum		

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	10-20; sedimentary and metasedimentary rock	10-20; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.32
Max. Erosion Hazard	High	Very high
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well
Soil Manageability Class	3-4GE	3-4GE
Group	IV	IV
Forest Site Class	5-6	5
Regeneration Potential	Low	Low
Available Water Capacity (AWC)	Very low	Very low
Upper 20 inches	1.7 inches	1.7 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C	C
Unified Soil Class	0-9 ML	0-16 ML
Depth Rating	9-19 GC	
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	3
Included Areas	35 percent inclusions of Voorhies family, mod.deep, Rock outcrop,metasedimentary, and micaceous soils.	

**256 Hecker family, deep  
35 to 70 percent slopes**

Map Unit Components	<b>Hecker family, deep</b>
Approx. Proportion	(60%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 35 to 70; NW to E, 2200 to 4500 ft.; SE to W, 2200 to 4800 ft.
Typical Vegetation	Oregon white oak

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam to gravelly clay loam, moderate granular to moderate subangular blocky structure, slightly acid
Subsoil	Light brownish gray very gravelly clay loam, moderate subangular blocky structure, neutral
Substratum	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.24-.43
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4GE
Group	III
Forest Site Class	4 (Estimate)
Regeneration Potential	Moderate
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.2 inches
Susceptibility to Burning Damage	Low
Hydrologic Soil Group	B-C
Unified Soil Class	0-13 ML
Depth Rating	13-60 GC
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	40 percent inclusions of Melbourne, Oxalis, and Soulajule families, deep, Rock outcrop, metasedimentary, and similar soils except moderately deep.

**257 Bins-Nanny families, deep-Woodseye family association  
5 to 35 percent slopes**

Map Unit Components	<b>Bins family, deep</b>	<b>Nanny family, deep</b>	<b>Woodseye family</b>
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Broad ridges and mountain sideslopes; 5 to 35; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.	Broad ridges and mountain sideslopes; 5 to 35; NW to E, 4500 to 5500 ft. SE to W, 4800 to 5500 ft.	Broad ridges and mountain sideslopes; 5 to 35; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.
Typical Vegetation	White fir	White fir	White fir

**Soil Profile Description**

Surface Layer	Yellowish brown loam, weak granular structure, slightly acid	Very dark grayish brown gravelly loam, weak granular structure, slightly acid	Yellowish brown gravelly loam, moderate to strong granular structure, slightly acid
Subsoil	Light olive brown loam, moderate subangular blocky structure breaks to moderate granular, medium to strongly acid	Brown to pale yellow very gravelly loam, weak subangular blocky structure, slightly acid	Yellowish brown extremely gravelly loam, moderate to strong granular structure, medium acid
Substratum			

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock	12-20; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.32	.20-.32	.24-.43
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately rapid	Moderately rapid
Soil Drainage	Well	Well	Well to somewhat excessively
Soil Manageability Class	2E	2Ep	2Ed
Group	II	II	II
Forest Site Class	3	3-4	4-5
Regeneration Potential	Low to moderate	Low	Low
Available Water Capacity (AWC)	Moderate to high	Low to moderate	Very low to low
Upper 20 inches	2.8 inches	1.4 inches	1.3 inches
Susceptibility to Burning Damage	Low to moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	B-C	C
Unified Soil Class	0-58 ML	0-60 GC	0-14 ML
Depth Rating			
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	3	3
Included Areas	25 percent inclusions of Deadman family, deep, Althouse family, mod. deep, Rock outcrop, metasedimentary, and soils similar to Bins family, deep and Nanny family, deep, except mod. deep.		

**258 Albus-Race families association, deep  
35 to 70 percent slopes**

Map Unit Components	<b>Albus family, deep</b>	<b>Race family, deep</b>
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes and ridges; 35 to 70; NW to E, 4500 to 5800 ft.; SE to W, 4800 to 5800 ft.	Mountain sideslopes and ridges; 35 to 70; NW to E, 4500 to 5800 ft.; SE to W, 4800 to 5800 ft.
Typical Vegetation	White fir	White fir

**Soil Profile Description**

Surface Layer	Light olive gray gravelly loam, moderate granular structure, slightly to medium acid	Light olive gray gravelly loam, strong granular structure, neutral
Subsoil	Light gray to grayish brown very gravelly clay loam, moderate subangular blocky structure, slightly to medium acid	Light gray to yellow gravelly silt loam to gravelly clay loam, moderate subangular blocky structure, slightly to medium acid
Substratum		White to very pale brown gravelly silt loam, massive, medium acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60; Mica schist	40-60+; Mica schist
Erosion Factor (K)	.20-.43	.20-.32
Max. Erosion Hazard	Very high	Very high
Soil Permeability	Moderate	Moderate
Soil Drainage	Well	Well
Soil Manageability Class	3-4E	3-4E
Group	III	III
Forest Site Class	3-4	3
Regeneration Potential	Low to moderate	Low to moderate
Available Water Capacity (AWC)	Moderate	High
Upper 20 inches	2.6 inches	2.3 inches
Susceptibility to Burning Damage	Moderate	Moderate
Hydrologic Soil Group	B-C	C
Unified Soil Class	0-60 MH	0-55 MH
Depth Rating		
Potential Failure as Road Subgrade	Yes	Yes
Seeding Recommendations	3	3
Included Areas	20 percent inclusions of Rock outcrop, metasedimentary, soils similar to Albus family, deep, except non-skeletal, soils similar to Race family, deep, except skeletal, and other mesic soils.	

**259 Nanny family, deep-Woodseye family-Bins family, deep association  
35 to 70 percent slopes**

Map Unit Components	<b>Nanny family, deep</b>	<b>Woodseye family</b>	<b>Bins family, deep</b>
Approx. Proportion	(30%)	(30%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.	Mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.	Mountain sideslopes; 35 to 70; NW to E, 4500 to 5500 ft.; SE to W, 4800 to 5500 ft.
Typical Vegetation	White fir	White fir	White fir
<b>Soil Profile Description</b>			
Surface Layer	Very dark grayish brown gravelly loam, weak granular structure, medium acid	Yellowish brown gravelly loam, moderate to strong granular structure, slightly acid	Yellowish brown loam, weak moderate granular structure, slightly acid
Subsoil	Light olive brown very gravelly loam, weak granular structure, very strongly acid	Yellowish brown extremely gravelly loam, moderate to strong granular structure, medium acid	Light olive brown silt loam, mod. subangular blocky structure breaks to mod. gran. struct., medium to strongly acid
Substratum			
<b>Soil Properties &amp; Management Interpretations</b>			
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	12-20; sedimentary and metasedimentary rock	40-60+; sedimentary and metasedimentary rock
Erosion Factor (K)	.20-.32	.24-.43	.20-.32
Max. Erosion Hazard	High	High	Very high
Soil Permeability	Moderate to moderately rapid	Moderately rapid	Moderate
Soil Drainage	Well	Well to somewhat excessively	Well
Soil Manageability Class	3-4Ep	3-4Ed	3-4E
Group	III	III	III
Forest Site Class	3-4	4-5	3
Regeneration Potential	Low	Low	Low to moderate
Available Water Capacity (AWC)	Low to moderate	Very low to low	Moderate to high
Upper 20 inches	1.4 inches	1.3 inches	2.8 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	C	B-C
Unified Soil Class	0-60 GC	0-14 ML	0-58 ML
Depth Rating			
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	3	3	3
Included Areas	20 percent inclusions of Deadman family, deep, Althouse family, mod. deep, and Rock outcrop, metasedimentary		

**260 Skalan-Kistirn-Holland families association, deep  
35 to 70 percent slopes**

Map Unit Components	<b>Skalan family, deep</b>	<b>Kistirn family, deep</b>	<b>Holland family, deep</b>
Approx. Proportion	(30%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; all aspects; 600 to 4000 ft.	Mountain sideslopes; 35 to 70; all aspects; 600 to 4000 ft.	Mountain sideslopes; 35 to 70; all aspects; 600 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madron

**Soil Profile Description**

Surface Layer	Very dark gray to pale brown very gravelly loam, moderate granular structure, strongly acid	Yellowish brown very gravelly loam, weak granular structure, neutral	Pale brown loam, moderate granular structure, medium to strongly acid
Subsoil	Dark reddish brown gravelly clay loam, moderate subangular blocky structure, medium to strongly acid	Light yellowish brown to strong brown very gravelly loam to clay loam, moderate angular blocky structure, strongly acid	Strong brown to reddish yellow clay loam, mod. subangular blocky structure, strongly acid
Substratum		Very pale brown very gravelly silty clay, moderate subangular blocky structure, strongly acid	Reddish yellow very gravelly loam, moderate subangular blocky structure to massive, medium to strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.37	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderately slow	Moderate	Moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4Ep	3-4p	3-4Ep
Group	III	III	III
Forest Site Class	3-4	3-4	3
Regeneration Potential	Moderate	Moderate	Moderate to high
Available Water Capacity (AWC)	Moderate	Moderate	High
Upper 20 inches	1.5 inches	1.9 inches	2.1 inches
Susceptibility to Burning Damage	Moderate	Moderate	Low
Hydrologic Soil Group	B	C	C
Unified Soil Class	0-12 ML	0-53 ML	0-60 ML
Depth Rating	12-56 GC	53-79 GC	
Potential Failure as Road Subgrade	No	No	Yes
Seeding Recommendations	2	1	1
Included Areas	25 percent inclusions of Soulajule and Melbourne families, deep.		

**261 Holland-Goldridge families association, deep  
5 to 35 percent slopes**

Map Unit Components	<b>Holland family, deep</b>	<b>Goldridge family, deep</b>
Approx. Proportion	(40%)	(40%)
Position, Slope, and Elevation	Benches and broad ridges; 5 to 35; all aspects; 600 to 4000 ft.	Benches and broad ridges; 5 to 35; 600 to 4000 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown loam, moderate granular structure, medium acid	Light yellowish brown to yellow gravelly loam, moderate granular, strongly to medium acid
Subsoil	Strong brown reddish yellow clay loam, moderate subangular blocky structure, strongly acid	Yellow to very pale brown clay loam, moderate subangular blocky structure, medium acid
Substratum	Reddish yellow very gravelly loam, moderate subangular blocky structure to massive, medium to strongly acid	

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary rock
Erosion Factor (K)	.20-.28	.20-.43
Max. Erosion Hazard	High	High
Soil Permeability	Moderately slow	Moderate to moderately slow
Soil Drainage	Well	Well
Soil Manageability Class	2e	2e
Group	II	II
Forest Site Class	3	2-3
Regeneration Potential	High	High
Available Water Capacity (AWC)	High	High
Upper 20 inches	2.1 inches	2.7 inches
Susceptibility to Burning Damage	Low	Low
Hydrologic Soil Group	C	C
Unified Soil Class	0-60 ML	0-14 ML
Depth Rating		14-43 CL
Potential Failure as Road Subgrade	No	Yes
Seeding Recommendations	1	1
Included Areas	20 percent inclusions of Skalan, Melbourne, and Soulajule families, deep.	

**265 Clallam-Hugo-Holland families association, deep, dry  
35 to 70 percent slopes**

Map Unit Components	<b>Clallam family, deep, dry</b>	<b>Hugo family, deep, dry</b>	<b>Holland family, deep, dr</b>
Approx. Proportion	(35%)	(20%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; SE to W; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; SE to W; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; SE to W; 600 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madron

**Soil Profile Description**

Surface Layer	Very pale brown very gravelly loam, moderate granular structure, strongly acid	Yellowish brown to very pale brown loam, moderate granular structure, medium acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid	Light yellowish brown to very pale brown heavy loam to clay loam, moderate subangular blocky structure, medium acid	Strong brown gravelly loam, subangular blocky structure, medium acid
Substratum	Very pale brown very gravelly loam to very gravelly clay loam, massive, strongly acid		Brownish yellow to reddish yellow very gravelly loam, moderate subangular blocky structure, medium acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary and metaigneous rock	40-60+; metasedimentary and metaigneous rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately slow	Moderately slow
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4Ep	3-4E	3-4E
Group	III	III	III
Forest Site Class	4-5	3-4	3-4
Regeneration Potential	Low to very low	Moderate	Moderate
Available Water Capacity (AWC)	Low	High	High
Upper 20 inches	1.4 inches	3.0 inches	2.1 inches
Susceptibility to Burning Damage	High	High	High
Hydrologic Soil Group	B	B	C
Unified Soil Class	0-60 ML	0-40 ML	0-60 ML
Depth Rating		40-60 GC	
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Deadwood family, Soulajule family, deep, and other soils on slopes over 70 percent.		

**266 Clallam-Hugo-Holland families association, deep  
35 to 70 percent slopes**

Map Unit Components	<b>Clallam family, deep</b>	<b>Hugo family, deep</b>	<b>Holland family, deep</b>
Approx. Proportion	(30%)	(25%)	(20%)
Position, Slope, and Elevation	Mountain sideslopes; 35 to 70; NW to E; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; NW to E; 600 to 3500 ft.	Mountain sideslopes; 35 to 70; NW to E; 600 to 3500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Very pale brown very gravelly loam, moderate granular structure, strongly acid	Yellowish brown to very pale brown loam, moderate granular structure, medium acid	Pale brown very gravelly loam, moderate granular structure, strongly acid
Subsoil	Very pale brown very gravelly loam, strong subangular blocky structure, strongly acid	Light yellowish brown to very pale brown heavy loam to clay loam, moderate subangular blocky structure, medium acid	Strong brown gravelly loam, strong subangular blocky structure, medium acid
Substratum	Very pale brown extremely gravelly loam to extremely gravelly clay loam, massive, strongly acid		Brownish yellow to reddish yellow very gravelly loam, moderate subangular blocky structure, medium acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	40-60+; metasedimentary rock	40-60+; metasedimentary and metaigneous rock	40-60+; metasedimentary and metaigneous rock
Erosion Factor (K)	.20-.28	.20-.28	.20-.28
Max. Erosion Hazard	High	High	High
Soil Permeability	Moderate	Moderate to moderately slow	Moderate
Soil Drainage	Well	Well	Well
Soil Manageability Class	3-4Ep	3-4E	3-4E
Soil Manageability Group	III	III	III
Forest Site Class	4	3	3
Regeneration Potential	Low	Moderate to high	Moderate to high
Available Water Capacity (AWC)	Low to moderate	High	High
Upper 20 inches	1.4 inches	3.0 inches	2.1 inches
Susceptibility to Burning Damage	Moderate	Moderate	Moderate
Hydrologic Soil Group	B-C	B	B-C
Unified Soil Class	0-60 ML,GC	0-40 ML 40-60 GC	0-60 ML
Depth Rating			
Potential Failure as Road Subgrade	No	No	NO
Seeding Recommendations	1	1	1
Included Areas	25 percent inclusions of Deadwood family, Souljule family, deep, and other soils on slopes over 70 percent.		

**271 Hugo family, moderately deep  
30 to 50 percent slopes**

<b>Map Unit Components</b>	<b>Hugo family, moderately deep</b>
Approx. Proportion	(80%)
Position, Slope, and Elevation	Mountain sideslopes; 30 to 50; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.15-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3Ep
Group	III
Forest Site Class	3-4
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	Low to moderate
Hydrologic Soil Group	B
Unified Soil Class	0-24 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	20 percent inclusions of Clallam family, mod. deep and Goldridge family, deep.

**272 Hugo family, moderately deep  
50 to 70 percent slopes**

Map Unit Components	<b>Hugo family, moderately deep</b>
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.15-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4E
Group	III-IV
Forest Site Class	3-4
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	Low to moderate
Hydrologic Soil Group	B
Unified Soil Class	0-24 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Clallam family, mod. deep, Deadwood family, and soils on slopes over 70 percent.

**273 Hugo family, moderately deep  
50 to 70 percent slopes**

Map Unit Components	<b>Hugo family, moderately deep</b>
Approx. Proportion	(85%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock
Erosion Factor (K)	.15-.28
Max. Erosion Hazard	High
Soil Permeability	Moderate
Soil Drainage	Well
Soil Manageability Class	3-4E
Group	III-IV
Forest Site Class	3-4
Regeneration Potential	Moderate to high
Available Water Capacity (AWC)	Moderate to high
Upper 20 inches	2.6 inches
Susceptibility to Burning Damage	Low to moderate
Hydrologic Soil Group	B
Unified Soil Class	0-24 ML
Depth Rating	
Potential Failure as Road Subgrade	No
Seeding Recommendations	1
Included Areas	15 percent inclusions of Clallam family, mod. deep, Deadwood family, and soils on slopes over 70 percent.

**274 Hugo family, moderately deep-Rock outcrop, metasedimentary complex  
50 to 70 percent slopes**

Map Unit Components	<b>Hugo family, moderately deep</b>	<b>Rock outcrop, metasedimentary</b>
Approx. Proportion	(45%)	(35%)
Position, Slope, and Elevation	Mountain sideslopes; 50 to 70; all aspects; 400 to 4500 ft.	Mountain sideslopes and cliffs; all aspects; 400 to 4500 ft.
Typical Vegetation	Douglas-fir - Tanoak - Madrone	Barren

**Soil Profile Description**

Surface Layer	Pale brown gravelly loam, strong granular structure, medium acid
Subsoil	Very pale brown gravelly heavy loam, weak subangular blocky structure to moderate granular, strongly acid
Substratum	Light gray gravelly loam, massive, very strongly acid

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	20-40; metasedimentary rock	
Erosion Factor (K)	.15-.28	
Max. Erosion Hazard	High	
Soil Permeability	Moderate	
Soil Drainage	Well	
Soil Manageability Class	3-4E	
Group	III-IV	
Forest Site Class	3-4	
Regeneration Potential	Moderate to high	
Available Water Capacity (AWC)	Moderate to high	
Upper 20 inches	2.6 inches	
Susceptibility to Burning Damage	Low to moderate	
Hydrologic Soil Group	B	D
Unified Soil Class	0-24 ML	
Depth Rating		
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	
Included Areas	20 percent inclusions of Clallam family, mod. deep and Deadwood family.	

**280 Deadwood family-Clallam family, deep, extremely gravelly-Rock outcrop  
metasedimentary association  
45 to 85 percent slopes**

Map Unit Components	<b>Deadwood family</b>	<b>Clallam family, deep, ext. gravelly</b>	<b>Rock outcrop, metasedimentary</b>
Approx. Proportion	(35%)	(25%)	(15%)
Position, Slope, and Elevation	Colluvial mountain sideslopes and ridges; 45 to 85; all aspects; 600 to 4500 ft.	Colluvial mountain sideslopes; 45 to 70; NW to E; 600 to 4500 ft.	Mountain sideslopes and cliffs; SE to W; 600 to 4800 ft.
Typical Vegetation	Canyon live oak	Canyon live oak	Barren

**Soil Profile Description**

Surface Layer	Dark brown very gravelly loam, moderate granular structure, slightly acid	Light brownish gray extremely gravelly loam, weak granular structure, neutral
Subsoil	Yellowish brown very gravelly loam, weak subangular blocky to moderate granular structure, medium acid	Light gray to white extremely gravelly loam, weak subangular blocky structure, neutral
Substratum		Very pale brown extremely gravelly loam, weak granular structure, neutral

**Soil Properties & Management Interpretations**

Rooting Depth (in.), Underlying Material	10-20; sedimentary, metasedimentary, and metaigneous rock	40-60+; sedimentary, metasedimentary, and metaigneous rock	
Erosion Factor (K)	.20-.37	.17-.24	
Max. Erosion Hazard	Very high	Moderate	
Soil Permeability	Moderately rapid to rapid	Moderately rapid to rapid	
Soil Drainage	Somewhat excessively	Somewhat excessively	
Soil Manageability Class	3-4GE	3-4GP	
Soil Manageability Group	IV	IV	
Forest Site Class	5-6	5	
Regeneration Potential	Low	Low	
Available Water Capacity (AWC)	Very low	Very low to low	
Upper 20 inches	1.7 inches	0.7 inches	
Susceptibility to Burning Damage	Moderate	High	
Hydrologic Soil Group	C	C	D
Unified Soil Class	0-9 ML	0-60 GC	
Depth Rating	9-19 GC		
Potential Failure as Road Subgrade	No	No	No
Seeding Recommendations	1	1	

25 percent inclusions of Skalan family, mod. deep, soils similar to Clallam family, deep, extremely gravelly, except more developed, and soils similar to Holland family, deep, except mod. deep.

**281 Clallam family, deep, extremely gravelly-Deadwood family association  
35 to 75 percent slopes**

Map Unit Components	<b>Clallam family, deep, ext. gravelly</b>	<b>Deadwood family</b>
Approx. Proportion	(45%)	(30%)
Position, Slope, and Elevation	Colluvial mountain sideslopes; 35 to 75; NW to E, 600 to 4500 ft.; SE to W, 600 to 4800 ft.	Colluvial mountain sideslopes and ridges; 35 to 70; NW to E, 600 to 4500 ft; SE to W, 600 to 4800 ft.
Typical Vegetation	Canyon live oak	Canyon live oak
<b>Soil Profile Description</b>		
Surface Layer	Light brownish gray extremely gravelly loam, weak granular structure, neutral	Dark brown very gravelly loam, moderate granular structure, slightly acid
Subsoil	Light gray to white extremely gravelly loam, weak subangular blocky structure, neutral	Yellowish brown very gravelly loam, weak subangular blocky to moderate granular structure, medium acid
Substratum	Very pale brown extremely gravelly loam, weak granular structure, neutral	
<b>Soil Properties &amp; Management Interpretations</b>		
Rooting Depth (in.), Underlying Material	40-60+; sedimentary and metasedimentary rock	10-20; sedimentary and metasedimentary rock
Erosion Factor (K)	.17-.24	.20-.37
Max. Erosion Hazard	Moderate	High
Soil Permeability	Moderately rapid to rapid	Moderate to rapid
Soil Drainage	Somewhat excessively	Well to somewhat excessively
Soil Manageability Class	3-4G	3-4Ed
Group	IV	IV
Forest Site Class	5	5-6
Regeneration Potential	Low	Low
Available Water Capacity (AWC)	Very low to low	Very low
Upper 20 inches	0.7 inches	1.7 inches
Susceptibility to Burning Damage	High	High
Hydrologic Soil Group	C	C
Unified Soil Class	0-60 GC	0-9 ML
Depth Rating		9-16 GC
Potential Failure as Road Subgrade	No	No
Seeding Recommendations	1	1
Included Areas	25 percent inclusions of Holland family, deep, Skalan family, mod. deep, and other soils on slopes over 70 percent.	