

Classification of the Soils

The system of classification used in this survey is that outlined in *Soil Taxonomy* (11) as directed by the National Cooperative Soil Survey. The system consists of six categories. In order of decreasing rank and increasing number of classes, the categories are: order, suborder, great group, subgroup, family, and series.

Orders are distinguished from each other on the basis of narrowly defined sets of identifying or diagnostic characteristics. Of the ten named orders, six are present on this Forest. They are Entisols, Inceptisols, Aridisols, Mollisols, Alfisols, and Ultisols.

Entisols includes those soils of such slight and recent development that only a light-colored surface horizon called an ochric epipedon is present. Profiles of Entisols reflect the characteristics of the parent material for the most part.

Inceptisols are soils with horizons of alteration or concentration with little accumulation of translocated materials other than carbonates and silica. They are moist for at least 90 consecutive days during the growing season. Inceptisols are the most prevalent soils present on this forest.

Aridisols are those soils that have diagnostic horizons, but they are usually dry in all horizons and never moist for as long as 90 consecutive days during the growing season. The few Aridisols that occur on this Forest are located on the east side of the survey area in isolated areas where average annual precipitation is about 12 inches.

Mollisols are those soils with nearly black organic rich surface horizons and high base saturation. They are typically under grassland vegetation, and are usually dry, but not as dry as Aridisols. In this survey, Mollisols were mapped in areas of lower precipitation (less than 35 inches) or where the parent material was high in bases (ultramafic, serpentinitic).

Alfisols includes those soils with subsurface horizons of clay accumulation and medium to high base saturation. They are moist for at least 90 consecutive days during the growing period. Next to Inceptisols, Alfisols are the most prevalent soils on this Forest.

Ultisols differ from Alfisols in that they have a lower base saturation. They form in a warmer wetter climate or on older highly weathered surfaces. They are usually moist for at least 90 consecutive days during the growing season. Ultisols only occur on the extreme western portion of the survey area where the mean annual precipitation is greater than 60 inches.

The orders are further subdivided into narrower and narrower categories. Orders are split up into suborders, which are divided into great groups, then subgroups and finally, into families. At the family level, the particle size class, mineralogy, and soil temperature regime are named to differentiate subgroups unless indicated at higher classification levels. On the Klamath National Forest, the soils have been classified and mapped at the subgroup and family level. Those soils mapped at the subgroup level (such as Lithic Mollic Haploxeralfs or Lithic Xerorthents) were not classified to the family category because they were new unnamed families, there was not enough data or acres of them to propose a new series and management concerns in these areas did not require more detailed mapping.

A further classification category used in more detailed mapping is the soil series (for instance, Holland, Clallam, Aiken, etc.). Since the lowest category the soils in this survey have been classified to is the family level, the soils are named by the representative series of that family. For instance, the family of loamy-skeletal, mixed, mesic Dystric Xerochrepts contain several soil series, one of which is the Clallam series. The soils present in this survey which fit this classification are called Clallam family soils, since Clallam has been named as the representative series for this family.

Table 3 lists the soils on the Klamath classified by soil name. Table 4 is a classification by taxonomic category.

TABLE 3. - Classification of the Soils

Soil Name	Family or Higher Taxonomic Class
Aiken family	Clayey, oxidic, mesic Xeric Haplohumults
Avis	Ashy-skeletal, frigid Dystric Xerorthents
Beaughton	Clayey-skeletal, serpentinitic, mesic Lithic Argixerolls
Belzar	Loamy-skeletal, mixed, frigid Andic Xerochrepts
Bluesprin	Loamy-skeletal, mixed, mesic Ultic Argixerolls
Buell	Loamy-skeletal, mixed Typic Cryumbrepts
Chawanakee	Loamy, mixed, mesic, shallow Dystric Xerochrepts
Clallam	Loamy-skeletal, mixed, mesic Dystric Xerochrepts
Coboc	Fine, kaolinitic, mesic Ultic Palexeralfs
Cowiche	Fine-loamy, mixed, mesic Aridic Argixerolls
Deadfall	Loamy-skeletal, serpentinitic Typic Cryorthents
Deadwood	Loamy-skeletal, mixed, mesic Dystric Lithic Xerochrepts
Decy	Loamy-skeletal, mixed, mesic Typic Xerumbrepts
Deetz	Ashy, mesic Dystric Xeropsamments
De Masters	Fine-loamy, mixed, frigid Pachic Ultic Argixerolls
Deven	Clayey, montmorillonitic, mesic Lithic Argixerolls
Dubakella	Clayey-skeletal, serpentinitic, mesic Mollic Haploxeralfs
Endlich	Loamy-skeletal, mixed Dystric Cryochrepts
Etchen	Loamy-skeletal, mixed, frigid Mollic Haploxeralfs
Gerle	Coarse-loamy, mixed, frigid Typic Xerumbrepts
Gilligan	Coarse-loamy, mixed, mesic Dystric Xerochrepts
Goldridge	Fine-loamy, mixed, mesic Typic Haploxerulfs
Guemes	Loamy-skeletal, serpentinitic, mesic Typic Haploxeralfs
Hades	Fine-loamy, mixed, frigid Pachic Argixerolls
Helvetia	Fine, mixed, mesic Ultic Argixerolls
Holland	Fine-loamy, mixed, mesic Ultic Haploxeralfs
Iller	Medial over loamy-skeletal, mixed, frigid Andic Xerumbrepts
Inville	Loamy-skeletal, mixed, frigid Ultic Haploxeralfs
Jayar	Loamy-skeletal, mixed, frigid Dystric Xerochrepts
Kang	Clayey-skeletal, serpentinitic, mesic Pachic Argixerolls
Kilmerque	Coarse-loamy, mixed, frigid Ultic Haploxerolls
Merkel	Loamy-skeletal, mixed, frigid Typic Xerochrepts
Morical	Fine-loamy, mixed, mesic Mollic Haploxeralfs
Nanny	Loamy-skeletal, mixed, frigid Typic Xerumbrepts
Neuske	Fine-loamy, mixed, frigid Mollic Haploxeralfs
Olete	Loamy-skeletal, mixed, mesic Typic Xerochrepts
Oosen	Ashy, frigid Dystric Xeropsamments
Ovall	Coarse-loamy, mixed, mesic Typic Xerumbrepts
Parks	Loamy-skeletal, serpentinitic, frigid Typic Xerochrepts
Prather	Clayey, kaolinitic, mesic Xeric Haplohumults
Quam	Fine-silty, mixed, frigid Cumulic Haplaquolls
Redcap	Cindery over medial-skeletal, frigid Dystric Xerorthents
Rogue	Coarse-loamy, mixed, frigid Dystric Xerochrepts
Ruclick	Clayey-skeletal, montmorillonitic, mesic Aridic Argixerolls

Soil Name	Family or Higher Taxonomic Class
Sheld	Medial-skeletal, frigid, Andic Xerumbrepts
Skalan	Loamy-skeletal, mixed, mesic Ultic Haploxeralfs
Smarts	Loamy-skeletal, mixed, frigid Pachic Ultic Argixerolls
Stonewell	Cindery, frigid Dystric Xerorthents
Tallac	Loamy-skeletal, mixed, frigid Pachic Xerumbrepts
Tangle	Clayey-skeletal, serpentinitic, frigid Mollic Palexeralfs
Teewinot	Loamy-skeletal, mixed Lithic Cryumbrepts
Toadlake	Loamy-skeletal, serpentinitic, frigid Typic Haploxeralfs
Trojan	Fine-loamy, mixed, frigid Ultic Argixerolls
Vipont	Loamy-skeletal, mixed, frigid Pachic Argixerolls
Washoe	Loamy-skeletal, mixed, mesic Xerollic Haplargids
Weitchpec	Loamy-skeletal, serpentinitic, mesic Typic Xerochrepts
Wintoner	Fine-loamy, mixed, frigid Ultic Haploxeralfs
Woodseye	Loamy-skeletal, mixed, frigid Lithic Xerumbrepts
Worley	Fine, montmorillonitic, mesic Mollic Palexeralfs
Zeibright	Loamy-skeletal, mixed, mesic Entic Xerumbrepts
	Haplic Durixeralfs, Lithic Haploxeralfs, Lithic Mollic Haploxeralfs, Lithic Ruptic-Xerochreptic Haploxeralfs, Mollic Haploxeralfs, Ultic Haploxeralfs, Lithic Xerorthents (cold) Lithic Xerorthents (granitic), Lithic Xerorthents (ultramafic), Entic Xerumbrepts, Lithic Xerumbrepts, Lithic Argixerolls, Lithic Cryoborolls, Lithic Haploxerolls, Typic Haploxerolls, Mollic Palexeralfs.

TABLE 4. - Classification by Taxonomic Category

Order	Suborder	Great Group	Subgroup	Family	Soil Name	
ALFISOLS	Xeralfs	Haploxeralfs	Mollic Haploxeralfs	clayey-skeletal, serpentinitic, mesic	Dubakella family	
				fine-loamy, mixed, frigid	Neuske family	
				fine-loamy, mixed, mesic	Morical family	
			loamy-skeletal, mixed, frigid	Etchen family		
			Typic Haploxeralfs	loamy-skeletal, serpentinitic, frigid	Toadlake family	
				loamy-skeletal, serpentinitic, mesic	Guemes family	
		Ultic Haploxeralfs	fine-loamy, mixed, frigid	Wintoner family		
			fine-loamy, mixed, mesic	Holland family		
			loamy-skeletal, mixed, frigid	Inville family		
			loamy-skeletal, mixed, mesic	Skalan family		
			Palexeralfs	Mollic Palexeralfs	clayey-skeletal, serpentinitic, frigid	Tangle family
					fine, montmorillonitic, mesic	Worley family
		Ultic Palexeralfs	fine, kaolinitic, mesic	Coboc family		
ARIDISOLS	Argids	Haplargids	Xerollic Haplargids	loamy-skeletal, mixed, mesic	Washoe family	
ENTISOLS	Psamments	Xeropsamments	Dystric Xeropsamments	ashy, frigid,	Oosen family	

Order	Suborder	Great Group	Subgroup	Family	Soil Name
ENTISOLS (continued)					
				ashy, mesic	Deetz family
		Xerorthents	Typic Cryorthents	loamy-skeletal, serpentinitic	Deadfall family
			Dystric Xerorthents	ashy-skeletal, frigid	Avis family
				cindery, frigid	Stonewell family
				cindery over medial-skeletal, frigid	Redcap family
INCEPTISOLS					
	Ochrepts	Cryochrepts	Dystric Cryochrepts	loamy-skeletal mixed	Endlich family
		Xerochrepts	Andic Xerochrepts	loamy-skeletal, mixed, frigid	Belzar family
			Dystric Xerochrepts	coarse-loamy, mixed, frigid	Rogue family
				coarse-loamy, mixed, mesic	Gilligan family
				loamy, mixed, mesic, shallow	Chawanakee family
				loamy-skeletal, mixed, frigid	Jayar family
				loamy-skeletal, mixed, mesic	Clallam family
			Typic Xerochrepts	loamy-skeletal, mixed, frigid	Merkel family
				loamy-skeletal, mixed, mesic	Olete family
				loamy-skeletal, serpentinitic, frigid	Parks family

Order	Suborder	Great Group	Subgroup	Family	Soil Name
INCEPTISOLS (continued)					
				loamy-skeletal, serpentinitic, mesic	Weitchpec family
		Cryumbrepts	Lithic Cryumbrepts	loamy-skeletal, mixed	Teewinot family
			Typic Cryumbrepts	loamy-skeletal, mixed	Buell family
		Xerumbrepts	Andic Xerumbrepts	medial-skeletal, frigid	Sheld family
			Entic Xerumbrepts	loamy-skeletal, mixed, mesic	Zeibright family
			Lithic Xerumbrepts	loamy-skeletal, mixed, frigid	Woodseye family
			Pachic Xerumbrepts	loamy-skeletal, mixed, frigid	Tallac family
			Typic Xerumbrepts	coarse-loamy, mixed, frigid	Gerle family
				coarse-loamy, mixed, mesic	Ovall family
				loamy-skeletal, mixed, frigid	Nanny family
MOLLISOLS	Xerolls	Argixerolls	Aridic Argixerolls	clayey-skeletal, montmorillonitic, mesic	Ruclick family
				fine-loamy, mixed, mesic	Cowiche family
			Lithic Argixerolls	clayey, montmoril- lonitic, mesic	Deven family
				clayey-skeletal, serpentinitic, mesic	Beaughton family
			Pachic Argixerolls	clayey-skeletal, serpentinitic, mesic	Kang family

Order	Suborder	Great Group	Subgroup	Family	Soil Name
MOLLISOLS (continued)					
				fine-loamy, mixed, frigid	Hades family
				loamy-skeletal, mixed, frigid	Vipont family
			Pachic Ultic Argixerolls	fine-loamy, mixed, frigid	DeMasters family
				loamy-skeletal, mixed, frigid	Smarts family
			Ultic Argixerolls	fine-loamy, mixed, frigid	Trojan family
				fine, mixed, mesic	Helvetia family
				loamy-skeletal, mixed, mesic	Bluesprin family
		Haplaguolls	Cumulic Haplaguolls	fine-silty, mixed, frigid	Quam family
		Haploxerolls	Ultic Haploxerolls	coarse-loamy, mixed, frigid	Kilmerque family
ULTISOLS	Humults	Haplohumults	Xeric Haplohumults	clayey, kaolinitic, mesic	Prather family
				clayey, oxidic mesic	Aiken family
		Haploxerults	Typic Haploxerults	fine-loamy, mixed, mesic	Goldridge family

Taxonomic Unit Descriptions and Their Morphology

In this section, each soil recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified. A pedon, a small three-dimensional area of soil, that is typical of the soil in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (10). Unless otherwise stated, colors in the descriptions are for dry soil. Following the pedon

description is the range of important characteristics of the soil, and a brief statement concerning use and vegetation.

The map units of each soil are listed in Table 2 and are described in the section "Detailed Soil Map Units."

Table 5 is the Map Unit Legend which lists the area of each soil and map unit component, and identifies its proportionate extent of the survey area.

AIKEN FAMILY

The Aiken family consists of deep or very deep, well drained residual soils formed from weathered alluvium or serpentinized metamorphic rocks. These soils occur on broad ridges, mountain sideslopes and high terraces. Slopes range from 2 to 50 percent. The mean annual precipitation is 50 to 100 inches and the mean annual temperature is about 52° F. Elevations are 600 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey, oxidic, mesic Xeric Haplohumults.

Typical Pedon: Aiken family gravelly loam - on a 30 percent convex southeast-facing slope at 2,100 feet elevation, under a 70 percent stand of Douglas-fir, sugar pine and ponderosa pine. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; weakly matted conifer needles.

A1-0 to 2 inches; reddish brown (5YR 4/4) gravelly loam, dark reddish brown (2.5YR 3/4) moist; weak medium granular structure; slightly hard, friable, slightly sticky and nonplastic; few roots; slightly acid (pH 6.1); clear smooth boundary.

A2-2 to 9 inches; reddish brown (2.5YR 4/4) gravelly loam, dark reddish brown (2.5YR 3/4) moist; moderate very fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common roots; continuous thin clay films on ped faces; slightly acid (pH 6.1); gradual smooth boundary.

Bt1-9 to 20 inches; reddish brown (2.5YR 4/4) gravelly clay loam, dark reddish brown (2.5YR 3/4) moist; moderately very fine subangular blocky structure; hard, friable, sticky and plastic; common roots; continuous thin clay films on ped faces; medium acid (pH 5.9); gradual smooth boundary.

Bt2-20 to 32 inches; reddish brown (2.5YR 5/4) gravelly clay loam, reddish brown (2.5YR 4/4) moist; moderate very fine angular blocky structure; hard, friable, very sticky and plastic; few roots; continuous thin clay films on ped faces; medium acid (pH 5.8); diffuse boundary.

Bt3-32 to 49 inches; reddish brown (2.5YR 5/4) gravelly clay loam, reddish brown (2.5YR 4/4) moist; weak very fine angular blocky structure; hard, friable,

sticky and plastic; very few roots; continuous thin clay films on ped faces; medium acid (pH 5.9); gradual smooth boundary.

C1-49 to 59 inches; yellowish red (5YR 5/6) gravelly silt loam, yellowish red (5YR 4/6) moist; weak coarse subangular blocky structure; hard, friable, sticky and slightly plastic; very few roots; common thin clay films on ped faces; medium acid (pH 5.9); gradual wavy boundary.

C2-59 to 67 inches; reddish yellow (7.5YR 6/6) silt loam, yellowish red (5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; very few roots; slightly acid (pH 6.2); abrupt irregular boundary.

R-67+ inches; serpentinized metamorphic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NW 1/4 NE 1/4 Section 15, T. 46 N., R. 12 W.

Range in Characteristics: The soil is 40 to greater than 60 inches to bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 46° F.; the mean July soil temperature is 55 to 75° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depth of 8 to 21 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is medium to slightly acid.

The A horizon is reddish brown, yellowish red, or red (2.5YR 4/4, 4/6, 5/4, 5/6; 5YR 4/3, 4/4, 5/4, 5/6). Moist colors are dark reddish brown, yellowish red, dark red (2.5YR 3/4, 3/4, 4/4, 4/6). It is gravelly clay loam, loam, or sandy loam, with 15 to 35 percent rock fragments. There are many fine and medium shot present in the A horizon. Reaction is slightly acid to medium acid.

The Bt horizon is reddish brown, red or yellowish red (2.5YR 4/4, 4/6, 5/4, 5/6, 5/8; 5YR 4/6, 5/6). Moist colors are dark reddish brown, dark red, reddish brown, red, or yellowish red (2.5YR 3/4, 3/6, 4/4, 4/6; 5YR 3/3, 3/4, 4/6, 5/6). It is clay loam, gravelly clay loam, clay or gravelly clay with 0 to 35 percent rock fragments. Fine black stains and fine and medium shot may be present in

the B horizon. The family control section has a weighted average of greater than 35 percent clay.

The C horizon is reddish yellow (5YR 6/6, 6/8; 7.5YR 6/6, 6/8, 7/6). Moist colors are red, yellowish red, or strong brown (2.5YR 5/8; 5YR 4/6, 4/8, 5/6; 7.5YR 5/8). It is loam, silt loam, or clay loam. Few shot may be present in the C horizon. Reaction is medium acid

to slightly acid.

Use and Vegetation: Used for timber production, wildlife habitat, and watershed. The native vegetation includes Douglas-fir, sugar pine, ponderosa pine, incense cedar, tanoak, madrone, black oak, deerbrush, bracken fern and poison oak.

AVIS FAMILY

The Avis family consists of very deep, well to somewhat excessively drained soils formed in volcanic ash overlying andesitic and basaltic flow rocks. These soils occur on mountain sideslopes, flats and lava flow ridges. Slopes are 2 to 50 percent. The mean annual precipitation is about 20 to 40 inches and the mean annual temperature is about 42° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Ashy-skeletal, frigid, Dystric Xerorthents.

Typical Pedon: Avis family sand - on an 8 percent north-facing slope at 5,400 feet elevation, under ponderosa pine, white fir and brush. (Colors are for dry soil unless otherwise noted.)

O-1/2 to 0 inches; loose conifer needles, twigs, and cones.

A1-0 to 1 inches; very dark grayish brown (10YR 3/2) sand, very dark brown (10YR 2/2) moist; single grained; loose, loose, nonsticky and nonplastic; few very fine and fine roots; common fine interstitial pores; 8 percent pebbles and 1 percent cobbles; slightly acid (pH 6.3); clear smooth boundary.

A2-1 to 6 inches; grayish brown (10YR 5/2) sand, very dark grayish brown (10YR 3/2) moist; single grained; loose, loose, nonsticky and nonplastic; common fine and very fine, and few medium roots; common very fine and few fine interstitial pores; 10 percent pebbles; neutral (pH 6.9); gradual wavy boundary.

C1-6 to 19 inches; yellowish brown (10YR 5/4) coarse sand, dark brown (10YR 4/3) moist; single grained; loose, loose, nonsticky and nonplastic; common medium and few coarse and fine roots; common very fine interstitial pores; 18 percent pebbles and 1 percent cobbles; neutral (pH 7.0); clear wavy boundary.

C2-19 to 61+ inches; yellowish brown (10YR 5/4) very cobbly coarse sand, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few coarse and medium roots; common very fine

interstitial pores; 25 percent pebbles and 15 percent cobbles; neutral (pH 7.2)

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 7 miles north of Mount Shasta, 2 1/2 miles east of Military Pass Road, 20 feet west of logging road; SW 1/4 SE 1/4 Section 3, T. 42 N., R. 3 W.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. The mean annual soil temperature is 39 to 46° F.; mean January soil temperature is 32 to 36° F.; and mean July soil temperature is 47 to 57° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 16 and 56 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown, dark brown, grayish brown, brown, yellowish brown, or pale brown (10YR 3/2, 4/3, 5/2, 5/3, 5/4, 6/3). Moist colors are very dark brown, very dark grayish brown, or dark brown (10YR 2/2, 3/2, 3/3). It is sand, fine sand, loamy sand, loamy fine sand, or gravelly loamy sand with 4 to 10 percent clay, and 2 to 20 percent gravel and 0 to 5 percent cobbles and stones. Reaction is slightly acid to neutral.

The C horizon is yellowish brown, light brownish gray, pale brown, or light yellowish brown (10YR 5/3, 5/4, 6/2, 6/4). Moist colors are dark brown, dark yellowish brown, dark grayish brown or brown (10YR 3/3, 3/4, 4/2, 4/3). It is very cobbly or extremely cobbly loamy sand, fine loamy sand, gravelly coarse sand, or very cobbly coarse sand with 4 to 9 percent clay and 20 to 80 percent cobbles, gravel, and stones. The weighted average of rock fragments in the 10 to 40 inch control section is greater than 35 percent. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used primarily for timber production and wildlife habitat. Native vegetation includes ponderosa pine, white fir, few lodgepole pine and red fir, bitterbrush, blue elderberry, snowbrush, greenleaf manzanita, rabbitbrush, squaw carpet, bottlebrush squirreltail, bromes and fescues.

BEAUGHTON FAMILY

The Beaughton family consists of shallow, well drained soils that formed in material weathered from serpentinized ultramafic rock. These soils are on mountain ridges and sideslopes. Slopes range from 30 to 90 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is about 50° F. Elevations are 2,000 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, mesic Lithic Argixerolls.

Typical Pedon: Beaughton family loam - on a 20 percent northeast-facing slope at 4,060 feet elevation under Jeffrey pine, rabbitbrush, cheatgrass and Idaho fescue cover. (Colors are for dry soil unless otherwise stated).

A1-0 to 1 inch; dark grayish brown (10YR 4/2) extremely gravelly loam, very dark gray (10YR 3/1) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few fine interstitial pores; 70 percent pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

Bt1-1 to 4 inches; grayish brown (10YR 5/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few thin clay films in pores and on ped faces; common very fine roots; common very fine and few fine tubular pores; 20 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt2-4 to 12 inches; grayish brown (2.5Y 5/2) very gravelly clay loam, very dark grayish brown (2.5Y 3/2) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common thin and moderately thick clay bridging and clay films on ped faces and in pores; few very fine, fine, and medium roots; common very fine and fine tubular pores; 45 percent pebbles and 2 percent cobbles; neutral (pH 7.0); clear wavy boundary.

R-12 inches; hard fractured serpentinitic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 3.5 miles east northeast of Callahan, California, 5 miles west of Kangaroo Lake, 3/4 miles south of the Polar Bear Mine; SW 1/4 SE 1/4 Section 12, T. 40 N., R. 8 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 57° F.; mean January soil temperature is 36 to 41° F.; mean July soil temperature is 57 to 71° F. The soil temperature exceeds 41° F. from February 20 to December 5 and exceeds 47° F. from March 20 to November 15. The soil between a depth of 7 inches and the lithic contact is dry in all parts from July 15 to October 20 in most years and is moist in some or all parts the rest of the year. The mollic epipedon is 7 to 19 inches thick. The base saturation is greater than 75 percent throughout the soil.

The A horizon is dark grayish brown, brown or yellowish brown (10YR 4/2, 4/3, 5/3, 5/4). Moist colors are very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/2, 3/1, 3/2, 3/3). It is gravelly sandy loam or gravelly to extremely gravelly loam with 12 to 16 percent clay and 20 to 70 percent gravels and cobbles. Reaction is slightly acid to neutral.

The Bt horizon is grayish brown or brown (2.5Y 5/2; 10YR 4/3, 5/2, 5/3). Moist colors are very dark grayish brown, dark brown, or dark grayish brown (2.5Y 3/2; 10YR 3/2, 3/3, 4/2). It is gravelly to extremely gravelly clay loam or extremely gravelly clay with 22 to 45 percent clay and 20 to 65 percent gravel and cobbles. The weighted average of the family control section is greater than 35 percent clay and greater than 35 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

Use and Vegetation: Used mainly for watershed, wildlife, range and some timber production. Native vegetation consists of Jeffrey pine, ponderosa pine, incense cedar, Douglas-fir, some digger pine, white oak, rabbitbrush, buckbrush, serviceberry, cheatgrass, Idaho fescue, blue wildrye and bottlebrush squirreltail.

BELZAR FAMILY

The Belzar family consists of very deep, well to somewhat excessively drained soils that formed in materials weathered from extrusive igneous rocks (cinders, basalt and/or andesite) overlain by young pumice and ash deposits. These soils are on mountain sideslopes, ridges and benches. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40°F. Elevations are 5,000 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Andic Xerochrepts.

Typical Pedon: Belzar family gravelly sandy loam - on a 2 percent sloping volcanic upland flat at 5,000 feet elevation, under Jeffrey pine, white fir, snowbrush, greenleaf manzanita, squaw carpet, rabbitbrush and perennial grasses. (Colors are for dry soil unless otherwise stated).

A1-0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly coarse sandy loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 25 percent pumice pebbles; slightly acid (pH 6.3); abrupt wavy boundary.

A2-3 to 7 inches; brown (7.5YR 5/4) gravelly coarse sandy loam, dark reddish brown (7.5YR 3/4) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; few very fine tubular and interstitial pores; 30 percent pumice pebbles; medium acid (pH 6.0); clear wavy boundary.

2Ab-7 to 13 inches; brown (7.5YR 5/4) gravelly sandy loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; few very fine tubular and common interstitial pores; 20 percent pebbles; medium acid (pH 6.0); gradual smooth boundary.

2Bt1b-13 to 21 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine, medium, and coarse roots; common very fine interstitial and few very fine tubular pores; 30 percent pebbles, 5 percent cobbles, and 4 percent stones; medium acid (pH 6.0); clear wavy boundary.

2Bt2b-21 to 35 inches; brown (7.5YR 5/4) very cobbly sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; very few thin clay films in pores; few very fine, fine, and medium roots; few very fine and fine tubular, and common fine interstitial pores; 20 percent pebbles, 30 percent cobbles, 10 percent stones; slightly acid (pH 6.3); gradual wavy boundary.

2Bt3b-35 to 54 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few thin clay films in pores and on ped faces and bridging; few very fine, fine, medium and coarse roots; few very fine and fine tubular and common fine interstitial pores; 60 percent pebbles, 15 percent cobbles, and 15 percent stones; slightly acid (pH 6.3); gradual wavy boundary.

2Cb-54 to 62 inches; brown (7.5YR 5/4) extremely gravelly sandy loam, dark brown (7.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common thin bridging; few very fine and fine roots; common very fine interstitial and few fine tubular pores, 70 percent pebbles; slightly acid (pH 6.3).

R-62+ inches; Fractured, hard andistic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 4 miles west-southwest of Garner Mountain, 4.5 miles north of Stevens Butte on Tennant Road; SE 1/4 SW 1/4 Section 9, T. 43 N., R. 1 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. Mean annual soil temperature is 38 to 46°F; mean January soil temperature is 30 to 35°F; mean July soil temperature is 43 to 55°F. The soil temperature exceeds 41°F. from April 25 to November 20 and exceeds 47°F. from June 1 to October 20. The soil between a depth of 10 to 30 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. Base saturation is greater than 60 percent in some part between the depths of 10 and 30 inches. When mollic colors occur the epipedon is not thick enough to qualify as a mollic epipedon.

The A horizon is very dark grayish brown, dark grayish brown, gray, grayish brown, brown or yellowish brown (10YR 3/2, 4/2, 5/1, 5/2, 5/3; 7.5YR 5/4). Moist colors

are black, very dark brown, very dark grayish brown, dark brown or dark reddish brown (10YR 2/1, 2/2, 3/2, 3/3; 7.5YR 3/4). It is gravelly to extremely gravelly coarse sand, gravelly to extremely gravelly loamy coarse sand, or gravelly to very gravelly coarse sandy loam with 0.5 to 8 percent clay and 15 to 90 percent pumice gravel. Reaction is strongly acid to slightly acid.

In some pedons there is a C horizon composed of additional layers of ash and pumice. It is very dark gray, dark grayish brown, dark yellowish brown, yellowish brown, light gray, or very pale brown (10YR 3/1, 4/2, 4/6, 5/4, 7/2, 7/3). Moist colors are black, very dark gray, very dark grayish brown, dark brown, dark yellowish brown, grayish brown, brown, light grayish brown, or pale brown (10YR 2/1, 3/1, 3/2, 4/3, 4/6, 5/2, 5/3, 6/2, 6/3), or a mixture of the above. Texture, pumice gravel and reaction are similar to the A horizon.

The 2Ab horizon is yellowish brown, light yellowish brown, brown, and light brown (10YR 5/4, 6/4; 7.5YR 5/4, 6/4). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 4/4; 7.5YR 3/4, 4/4). Texture is gravelly and very gravelly sandy loam, very gravelly and extremely cobbly fine sandy loam, or very gravelly loam with 5 to 18 percent clay and 15 to 75 percent gravel,

cobbles and few stones. Reaction is medium acid to neutral.

The 2Btb horizon is pale brown, light yellowish brown or brown (10YR 6/3, 6/4; 7.5YR 5/4). Moist colors are dark brown, dark yellowish brown, or brown (10YR 3/3, 3/4, 4/3, 4/4; 7.5YR 4/4). It is very cobbly loam, gravelly to extremely gravelly sandy loam, extremely gravelly fine sandy loam, or extremely cobbly fine sandy loam with 8 to 20 percent clay and 35 to 90 percent gravel, cobbles, and stones. Reaction is slightly acid to neutral.

The 2Cb horizon, where present, is similar in color to the 2 Bt horizon, but is one to two chromas or values lower than the horizons above. It is very to extremely gravelly sandy loam, fine sandy loam, or loam with 8 to 20 percent clay and 50 to 90 percent gravel, cobbles, and few stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly for timber production and wildlife habitat. Native vegetation is lodgepole pine, ponderosa pine, white fir, few red fir, big sagebrush, snowbrush, greenleaf manzanita, rabbitbrush, bitterbrush, squaw carpet and perennial grasses, usually bottlebrush squirreltail, stipas, and a few wheatgrasses.

BLUESPRIN FAMILY

The Bluesprin family consists of moderately deep to deep, well drained soils formed in residuum or colluvium from metamorphic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 50 percent. The mean annual precipitation is 30 to 50 inches and the mean annual temperature is 52° F. Elevations range from 2,000 to 4,800 feet. The climate is mediterranean with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Ultic Argixerolls.

Typical Pedon: Bluesprin family very gravelly loam - on a 45 percent southwest-facing slope at 3,050 feet elevation, under a cover of Oregon white oak and California fescue. (Colors are for dry soil unless otherwise noted).

O-2 to 0 inches; loose and matted oak leaves and grass litter.

A1-0 to 1 inch; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, slightly sticky and nonplastic; common very fine roots; 40 percent pebbles and 5 percent cobbles; neutral (pH 6.8); abrupt smooth boundary.

A2-1 to 6 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (7.5YR 3/2) moist; moderate very fine angular blocky structure; slightly hard, slightly sticky and slightly plastic; common very fine and fine roots; 40 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear smooth boundary.

AB-6 to 11 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist, moderate fine and medium subangular blocky structure; hard, slightly sticky and slightly plastic; few very fine and fine roots; 50 percent pebbles and 5 percent cobbles; neutral (pH 7.0); gradual smooth boundary.

Bt1-11 to 23 inches; brownish yellow (10YR 6/6) very gravelly clay loam, dark brown (10YR 4/3) moist;

weak fine and medium subangular blocky structure; hard, sticky and plastic; many thin clay films in pores, and few moderately thick clay films on ped faces; very few very fine and fine roots; 60 percent pebbles and 10 percent cobbles; neutral (pH 6.8); abrupt irregular boundary.

R-23+ inches; highly fractured hard schist bedrock.

Type Location: Salmon River District, Klamath National Forest; Siskiyou County, California; about 3/4 mile southeast of the confluence of St. Claire Creek and the South Fork of the Salmon River; NE 1/4 NW 1/4 NE 1/4 Section 36, T. 38 N., R. 12 W., Mount Diablo Base Meridian.

Range in Characteristics: Bluesprin soils are 20 to 60 inches deep to highly fractured metamorphic bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 33 to 42° F.; the mean July soil temperature is 62 to 73° F. The soil temperature at a depth of 20 inches exceeds 41° F. from March 31 through mid-December and exceeds 47° F. from mid-March through November 30. The soil is dry between the depths of 4 and 13 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is brown or yellowish brown (10YR 5/3, 5/4) dry, and very dark grayish brown or dark brown (7.5YR 3/2; 10YR 3/2, 3/3) moist. It is a very gravelly loam. Rock fragments are 35 to 45 percent by volume. Reaction is neutral to medium acid.

The Bt horizon is brownish yellow (10YR 6/6) dry, and brown (10YR 4/3) moist. It is a very gravelly clay loam. Rock fragments are 40 to 60 percent by volume. Reaction is neutral to slightly acid.

Use and Vegetation: Used mainly for woodland, wildlife and watershed. Native vegetation consists of Oregon white oak forest with California fescue and other perennial grasses. Few ponderosa pine and canyon live oak.

BUELL FAMILY

The Buell family consists very deep, well drained soils formed from metamorphic colluvium and glacial till. These soils occur on glaciated sideslopes and valleys. Slopes range from 2 to 50 percent. The mean annual precipitation is 60 to 90 inches and the mean annual temperature is about 38° F. Elevations are 6,200 to 8,000 feet. The climate is mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, mixed Typic Cryum-brepts.

Typical Pedon: Buell family gravelly loam - on a 29 percent southeast-facing slope at 7,700 feet elevation, under a cover of whitebark pine, mountain hemlock, and an assortment of grasses and forbs. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; loose conifer needles and herbaceous litter.

A1-0 to 3 inches; brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine roots; 20 percent pebbles, 1 percent cobbles and 1 percent stones; very strongly acid (pH 5.0); clear wavy boundary.

A2-3 to 7 inches; dark yellowish brown (10YR 4/4) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many roots; 20 percent pebbles, 1 percent cobbles and 1 percent stones; very strongly acid (pH 5.0); clear smooth boundary.

Bw-7 to 16 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; common roots; 30 percent pebbles, 5 percent cobbles and 10 percent stones; very strongly acid (pH 5.0); gradual smooth boundary.

C-16 to 60+ inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; few roots; 30 percent pebbles, 10 percent cobbles and 10 percent stones; very strongly acid (pH 5.0).

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 1 mile east-northeast of Boulder Peak; Section 14, T. 43 N., R. 11 W.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches deep. The mean annual soil temperature is 32 to 46° F.; the mean summer soil temperature is 40 to 47° F. where an O horizon is present, and 50 to 55° F. where no O horizon is present. The soil temperature exceeds 41° F. from May 15 to November 10, and is greater than 47° F. from July 1 to October 10. The soil between the depths of 8 and 23 inches is dry in all parts from August 10 to October 10. Base saturation is assumed to be less than 50 percent throughout the soil.

The A horizon is brown, dark grayish brown, dark yellowish brown or grayish brown (7.5YR 5/2, 5/4; 10YR 4/2, 4/3, 4/4, 5/2, 5/3). Moist colors are dark brown, or very dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 3/2, 3/3). It is gravelly or very gravelly loam, with 20 to 40 percent gravel and 1 to 10 percent cobbles and stones.

The Bw horizon is brown, strong brown, or yellowish brown (7.5YR 5/4, 5/6; 10YR 5/3, 5/4, 5/6). Moist colors are dark brown, strong brown, and dark yellowish brown (7.5YR 4/4, 4/6; 10YR 4/3, 4/4, 4/6). It is very gravelly or extremely gravelly loam, with 30 to 60 percent pebbles and 5 to 20 percent cobbles and stones.

The C horizon is pinkish gray, light brown, pale brown, or light yellowish brown (7.5YR 6/2, 6/4; 10YR 6/3, 6/4). Moist colors are dark brown or dark yellowish brown (7.5YR 4/2, 4/4; 10YR 4/3, 4/4). It is very gravelly loam or very gravelly sandy loam, with 35 to 60 percent gravel and 10 to 20 percent cobbles and stones.

Use and Vegetation: Used for watershed, wildlife, timber production and recreation. The native vegetation is whitebark pine, mountain hemlock, brewer spruce, red fir, foxtail pine, buckwheat, aster, penstemon, lupine, knotweed, yarrow, monardella, bottlebrush squirreltail, blue wild rye, fescue, brome and other meadow forbs and perennial grasses.

CHAWANAKEE FAMILY

The Chawanakee family consists of shallow, somewhat excessively drained residual soils formed from granitic rocks. These soils occur on mountain sideslopes and narrow ridges. Slopes are 30 to 90 percent. The mean annual precipitation is 40 to 70 inches and the mean annual temperature is about 51° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy, mixed, mesic, shallow Dystric Xerochrepts.

Typical Pedon: Chawanakee family loam - on a 30 percent southwest-facing slope at 4,400 feet elevation, under a mixed conifer and oak cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; matted conifer needles and twigs.

A-0 to 1 inch; brown (7.5YR 4/2) loam, dark reddish brown (5YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine, medium, and few coarse roots; few, fine interstitial pores; 10 percent pebbles; strongly acid (pH 5.5); clear smooth boundary.

Bw1-1 to 4 inches; strong brown (7.5YR 4/6) sandy loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; very few very thin clay films in pores and as bridges; common very fine, fine and few coarse roots; common very fine and fine interstitial pores; 30 percent pebbles; medium acid (pH 6.0); gradual smooth boundary.

Bw2-4 to 10 inches; brown (7.5YR 4/4) gravelly sandy loam, dark reddish brown (5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, nonplastic; few very thin clay films as bridges; many very fine and fine, and few medium roots; common very fine and fine interstitial pores; 30 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

BC-10 to 15 inches; brown (7.5YR 4/4) gravelly sandy loam, brown (7.5YR 4/4) moist; massive; loose, loose, nonsticky and nonplastic; few very fine and fine roots; common very fine interstitial pores; 30 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary.

Cr-15+ inches; soft, weathered bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; SW 1/4 SE 1/4 Section 34, T. 48 N., R. 8 W.

Range in Characteristics: The soil is 10 to 19 inches deep to soft weathered bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January temperature is 35 to 45° F.; the mean July temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 11 and 19 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly acid to neutral.

The A horizon is brown, dark grayish brown, grayish brown, light brownish gray, or pale brown (7.5YR 4/2, 4/4, 5/2, 5/4; 10YR 4/2, 5/2, 5/3, 6/2, 6/3; 2.5Y 4/2, 5/2, 6/2). Moist colors are dark reddish brown, dark brown, very dark grayish brown, or dark yellowish brown (5YR 3/3; 7.5YR 3/2, 3/3; 10YR 3/2, 3/3; 2.5Y 3/2). It is loam, sandy loam, or loamy sand, and may be gravelly. Clay content is 8 to 12 percent. There are 10 to 30 percent gravel. Reaction is medium to strongly acid.

The Bw horizon is brown, strong brown, yellowish brown, pale brown, light yellowish brown, light brownish gray, light gray, or pale yellow (7.5YR 4/4, 4/6, 5/4, 5/6; 10YR 5/3, 5/4, 6/3, 6/4; 2.5Y 6/2, 6/4, 7/2, 7/4). Moist colors are dark reddish brown, reddish brown, brown, dark brown, dark yellowish brown, dark grayish brown, or grayish brown (5YR 3/3, 3/4, 4/3, 4/4; 7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 3/3, 3/4, 4/2, 4/3, 4/4; 2.5Y 4/2, 5/2). It is a sandy loam or gravelly sandy loam with a 1 to 2 percent more clay content than the A horizon. There are 10 to 35 percent gravels. Reaction is slightly to medium acid.

The Cr horizon is soft, highly weathered bedrock.

Use and Vegetation: Used primarily for timber production, watershed, range, and wildlife habitat. The native vegetation includes ponderosa pine, Douglas-fir, incense cedar, sugar pine, black oak, canyon live oak, deerbrush, squaw carpet, whiteleaf manzanita and bluegrass.

CINDER LANDS

Cinder lands consist of loose cinders and other scoriaceous magmatic ejecta. Slopes are 30 to 70 percent. Water-holding capacity is very low and trafficability is

poor. Cinder lands are used for wildlife habitat and watershed. A few areas are used as a source of cinders for road surfaces.

CLALLAM FAMILY, DEEP

The Clallam family deep, consists of deep, well drained soils formed in residuum and colluvium from metamorphic rocks or glacial till. These soils occur on mountain sideslopes, colluvial footslopes and ground moraines. Slopes range from 2 to 90 percent. The mean annual precipitation is 30 to 90 inches and the mean annual temperature is 52°F. Elevations range from 500 to 5,200 feet. The climate is mediterranean, with warm dry summers, and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Dystric Xerochrepts.

Typical Pedon: Clallam family, deep, very gravelly loam - on a 75 percent northeast-facing slope at 3,000 feet elevation, under a mixed conifer stand. (Colors are for dry soil unless otherwise noted.)

O-1 to 0 inches; loose and matted conifer needles and broad leaves, more decomposed with increasing depth.

A1-0 to 2 inches; grayish brown (10YR 5/2) very gravelly loam, very dark brown (10YR 2/2) moist; strong very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine tubular and interstitial pores; 90 percent pebbles; slightly acid (pH 6.4); clear smooth boundary.

A2-2 to 7 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; slightly hard, friable; common very fine and few fine roots; common very fine and fine tubular and interstitial pores; slightly sticky and nonplastic; 70 percent pebbles; slightly acid (pH 6.1); gradual smooth boundary.

Bw1-7 to 13 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine tubular and interstitial pores; 65 percent pebbles; medium acid (pH 5.7); gradual smooth boundary.

Bw2-13 to 30 inches; very pale brown (10YR 7/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine, common fine and medium roots; many very fine tubular and interstitial pores; 45 percent pebbles; medium acid (pH 5.8); gradual smooth boundary.

C-30 to 42 inches; very pale brown (10YR 7/4) very gravelly clay loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine interstitial pores; 65 percent pebbles; medium acid (pH 5.8); abrupt irregular boundary.

R-42+ inches; highly fractured metamorphic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; NE 1/4, NW 1/4, NE 1/4, Section 2, T. 14 N., R. 6 E. Humboldt Base Meridian.

Range in Characteristics: The soil is 40 to 60 inches deep to bedrock. The mean annual soil temperature is 47° to 59°F.; the mean January soil temperature is 33 to 42°F.; the mean July soil temperature is 62 to 73°F. The soil temperature at a depth of 20 inches exceeds 41°F. from March 31 through mid-December and exceeds 47°F. from mid-March through November 30. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year. The base saturation throughout the soil is less than 60 percent.

The A horizons are brown, grayish brown, pale brown, yellowish brown, or light brownish gray or light yellowish brown (10YR 5/2, 5/3, 5/4, 6/3; 7.5YR 4/3; 2.5Y 6/2, 6/4). Moist colors are very dark brown, dark brown, dark grayish brown, or light olive brown (10YR 2/2, 3/3; 7.5YR 3/2, 4/3; 2.5Y 4/2, 5/4). Dark colors do not meet mollic criteria because they are too thin. It is very gravelly loam or gravelly loam. Rock fragments are 20 to 90 percent by volume. Reaction is slightly acid to very strongly acid.

The Bw horizons are brown, light yellowish brown or very pale brown (10YR 6/4, 6/5, 7/4; 7.5YR 5/4). Moist colors are brown, dark brown, yellowish brown, light yellowish brown, or light brown (10YR 5/4, 6/4; 7.5YR 3/4, 4/4, 5/4; 2.5Y 5/4). It is very gravelly, or very cobbly loam or clay loam with 1 to 2 percent more clay content than the A horizon. Rock fragments are 35 to 70 percent by volume. Reaction is slightly acid to medium acid.

The C horizon is brown, very pale brown, or light yellowish brown (7.5YR 5/4; 10YR 6/4, 6/5, 7/4). Moist colors are brown, dark brown, yellowish brown or light olive brown (10YR 5/4, 6/4; 7.5YR 3/4, 4/4, 5/4; 2.5Y 5/4). It is very gravelly clay loam. Rock fragments are 55 to 85 percent by volume. Reaction is medium acid.

Use and Vegetation: Used mainly for commercial conifer production. Native vegetation is Douglas-fir, sugar pine, incense cedar, ponderosa pine, white fir, tanoak,

madrone, black oak, live oak, whiteleaf manzanita, deerbrush, modesty flower, bracken fern, longleaf mahonia, vetch, bedstraw and bluegrass.

CLALLAM FAMILY, VERY DEEP

The Clallam family, very deep consists of moderately well drained soils formed in material weathered from metamorphic rocks, glacial till, colluvium or alluvium. These soils occur on moraines, alluvial deposits and landslide deposits. Slopes range from 0 to 70 percent. The mean annual precipitation is 40 to 80 inches and the mean annual temperature is about 51° F. Elevations are 1,000 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Dystric Xerochrepts.

Typical Pedon: Clallam family, very deep, gravelly sandy loam - on a 1 percent slope at 1,300 feet elevation, under a cover of Douglas-fir, madrone and Oregon white oak. (Colors are for dry soil unless otherwise stated).

Oi-1 to 0 inches; scattered broad leaves.

A1-0 to 5 inches; brown (10YR 5/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; massive; very friable, slightly sticky and nonplastic; common very fine roots; 25 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

A2-5 to 8 inches; brown (10YR 5/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; very friable slightly sticky and nonplastic; common, very fine and fine roots; many very fine tubular and interstitial pores; 40 percent pebbles; medium acid (pH 5.9); clear smooth boundary.

Bw1-8 to 17 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark brown (10YR 4/3) moist; very weak fine subangular blocky structure; very friable, slightly sticky and nonplastic; common, very fine, fine and medium roots; many very fine and fine interstitial pores; 45 percent pebbles; medium acid (pH 5.8); gradual smooth boundary.

Bw2-17 to 31 inches; brownish yellow (10YR 6/6) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; very weak medium subangular blocky structure; very friable, slightly sticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; 40 percent pebbles; medium acid. (pH 5.9); gradual wavy boundary.

C-31 to 60+ inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, brown (10YR 5/3) moist;

massive; very friable, nonsticky and nonplastic; few fine and medium roots; 80 percent pebbles; medium acid (pH 5.6).

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; 0.6 miles west-southwest of Fort Goff; SW 1/4 NW 1/4 Section 5, T. 46 N., R. 12 W.

Range in Characteristics: The soil is greater than 60 inches deep to bedrock or unconsolidated alluvium. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 70° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 14 and 41 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is medium acid to neutral. The base saturation is less than 60 percent throughout the soil.

The A horizon is brown, pinkish gray, light brown, grayish brown, light brownish gray, pale brown, light olive brown, or light yellowish brown (7.5YR 5/2, 5/4, 6/2, 6/4; 10YR 5/2, 5/3, 6/2, 6/3; 2.5Y 5/2, 5/4, 6/2, 6/4). Moist colors are dark brown, very dark grayish brown, dark grayish brown, or olive brown (7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 3/2, 3/3, 4/2, 4/3; 2.5Y 3/2, 4/2, 4/4). The A horizon does not meet thickness criteria for a mollic horizon. Textures are gravelly or very gravelly loam or sandy loam, with 15 to 60 percent gravel. Reaction is medium to slightly acid.

The B horizon is light brown, reddish yellow, pink, yellowish brown, light yellowish brown, brownish yellow, yellow, or pale yellow (7.5YR 6/4, 6/6, 7/4, 7/6; 10YR 5/4, 5/6, 6/4, 6/6, 7/6; 2.5Y 5/4, 6/4, 6/6). Moist colors are brown, strong brown, dark yellowish brown, yellowish brown, light olive brown, light yellowish brown, or olive yellow (7.5YR 5/4, 5/6; 10YR 4/3, 4/4, 4/6, 5/3, 5/4; 2.5Y 5/4, 6/4, 6/6). It is very gravelly or extremely gravelly, sandy loam, loam, sandy clay loam or clay loam with 50 to 75 percent gravel. Reaction is medium acid to neutral.

The C horizon is pink, light brown, reddish yellow, pale brown, light yellowish brown, brownish yellow, or very pale brown (5YR 7/3, 7/4; 7.5YR 6/4, 6/6, 7/4; 10YR 6/3, 6/4, 6/6, 7/3, 7/4). Moist colors are light reddish brown, brown, strong brown, or yellowish brown (5YR 6/3, 6/4; 7.5YR 5/4, 5/6; 10YR 5/3, 5/4). It is extremely gravelly sandy

loam or loamy sand with greater than 70 percent gravel.
Reaction is medium acid to neutral.

Use and Vegetation: Used for timber production, wildlife, and recreation. The native vegetation includes

Douglas-fir, sugar pine, madrone, tanoak, bigleaf maple, Oregon white oak, California black oak, canyon live oak, mountain dogwood, modesty flower, snowberry, swordfern, deerbrush and poison oak.

COBOC FAMILY

The Coboc family consists of very deep well drained soils that formed in alluvium and colluvium from mixed metamorphic rock types. These soils are on high terraces, landslide deposits and mountain footslopes. Slopes range from 2 to 50 percent. The mean annual precipitation is 30 to 60 inches and the mean annual temperature is about 50° F. Elevations are 1,200 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine, kaolinitic, mesic Ultic Palexeralfs.

Typical Pedon: Coboc family gravelly loam - on a 45 percent southwest-facing convex slope at 1,750 feet elevation, under ponderosa pine, Douglas-fir, incense cedar, madrone, California black oak, deerbrush, whiteleaf manzanita and forbs. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inch; fresh and partially decomposed needles and twigs.

A1-0 to 1 inch; brown (7.5YR 5/4) gravelly loam, reddish brown (5YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; common roots; common very fine tubular and few very fine interstitial pores; 20 percent pebbles; slightly acid (pH 6.3); clear smooth boundary.

A2-1 to 6 inches; brown (7.5YR 5/4) gravelly loam, reddish brown (5YR 4/3) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common roots; common very fine tubular and interstitial pores; 20 percent pebbles; slightly acid (pH 6.1); gradual smooth boundary.

Bt1-6 to 18 inches; yellowish red (5YR 5/6) gravelly clay loam, reddish brown (5YR 4/4) moist; moderate very fine and fine subangular blocky structure; very hard, friable, sticky and plastic; few thin clay films on ped faces; common roots; few very fine tubular and common very fine and fine interstitial pores; 25 percent pebbles; medium acid (pH 5.9); diffuse boundary.

Bt2-18 to 40 inches; yellowish red (5YR 5/6) gravelly clay, yellowish red (5YR 5/6) moist; moderate medium angular blocky structure; very hard, firm, very sticky and very plastic; continuous moderately thick clay films on ped faces and pores; few roots;

common very fine and fine tubular pores; 25 percent pebbles; strongly acid (pH 5.5); diffuse boundary.

Bt3-40 to 60+ inches; reddish yellow (5YR 6/6) gravelly clay loam, yellowish red (5YR 5/6) moist; weak coarse angular blocky structure; very hard, firm, very sticky and plastic; many moderately thick clay films on ped faces and pores; very few roots; few very fine tubular pores; 25 percent pebbles; medium acid (pH 5.7)

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; about 2.5 miles northeast of the town of Seiad Valley; SW 1/4 NW 1/4 Section 5, T. 46 N., R. 11 W.

Range in Characteristics: The soil is 60 or more inches deep. Mean annual soil temperature is 47 to 58° F.; mean January soil temperature is 36 to 46° F.; mean July soil temperature is 58 to 75° F. The soil temperature exceeds 41° F. from February 20 to December 1 and exceeds 47° F. from March 20 to November 15. The soil between the depths of 8 to 24 inches is dry for 90 or more days from mid-July to mid-October in most years and is moist in some or all parts the rest of the year. The base saturation from 6 to 60 inches is between 35 and 75 percent.

The A horizon is brown, dark brown or yellowish red (7.5YR 4/4, 5/4; 5YR 5/6). Moist colors are very dark grayish brown or reddish brown (10YR 3/2; 5YR 4/4, 4/3). It is very gravelly loam, gravelly loam or loam with 20 to 27 percent clay. Gravel ranges from 15 to 30 percent. Reaction is medium or slightly acid.

The Bt horizon is reddish yellow, yellowish red, or red (7.5YR 6/6; 5YR 5/6, 6/6; 2.5YR 5/7, 5/8). Moist colors are reddish yellow, reddish brown, yellowish red or red (7.5YR 6/6; 5YR 4/4, 5/4, 5/6; 2.5YR 4/6, 5/6). It is gravelly clay loam, clay loam or gravelly clay. Gravel ranges from 20 to 35 percent. It has a weighted average of greater than 35 percent clay. Clay content does not decrease by as much as 20 percent of the maximum amount of clay to a depth of 60 inches. Reaction is strongly acid to neutral.

Use and Vegetation: Used mainly as watershed, wildlife habitat and timber production. Vegetation is ponderosa pine, Douglas-fir, incense cedar, madrone, knobcone pine, California black oak, Oregon white oak, canyon live oak, deerbrush, whiteleaf manzanita and forbs.

COWICHE FAMILY

The Cowiche family consists of deep well drained soils that formed in alluvium and materials weathered from andesitic or basaltic rock. These soils are on terraces and lava flows on volcanic uplands. Slopes range from 2 to 9 percent. The mean annual precipitation is 9 to 12 inches and mean annual temperature is about 52° F. Elevations are 4,200 to 4,600 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic, Aridic Argixerolls.

Typical Pedon: Cowiche family silt loam - on a 2 percent sloping flat at 4,581 feet elevation, under brush, ponderosa pine and juniper. (Colors are for dry soil unless otherwise stated).

A1-0 to 3 inches; brown (10YR 5/3) silt loam, dark brown (7.5YR 3/2) moist; moderate very fine, fine, medium and coarse platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine interstitial and vesicular pores; neutral (pH 7.0); abrupt smooth boundary.

A2-3 to 8 inches; brown (10YR 5/3) loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bt1-8 to 18 inches; brown (10YR 5/3) sandy clay loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few thin clay films on ped faces; few very fine and fine roots; few very fine and fine tubular pores; neutral (pH 7.0); clear smooth boundary.

Bt2-18 to 42 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, very

friable, slightly sticky and slightly plastic; few thin clay films in pores; few very fine and fine tubular pores; 10 percent saprolite pebbles; neutral (pH 7.0).

R-42+ inches; hard andesitic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 2 1/2 miles southeast of Cedar Mountain, 2 miles northeast of Antelope Sink, 50 yards south of dirt road; NW corner of SW 1/4 SE 1/4 Section 33, T. 45 N., R. 1 E.

Range in Characteristics: Depth to a lithic contact is 40 to 60 inches. Mean annual soil temperature is 49 to 60° F.; mean January soil temperature is 38 to 47° F.; and mean July soil temperature is 58 to 72° F. The soil temperature exceeds 41° F. from March 20 to November 30 and exceeds 47° F. from April 10 to November 10. The soil between the depths of 6 and 17 inches is dry in all parts from June 1 to October 20 and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches of soil.

The A horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark brown or dark brown (10YR 3/2, 3/3; 7.5YR 3/2). It is loam, sandy loam, or silt loam with 12 to 23 percent clay and 0 to 5 percent gravel. Reaction is slightly acid to neutral.

The Bt horizon is brown, pale brown, or light yellowish brown (7.5YR 5/4; 10YR 5/3, 6/3, 6/4). Moist colors are dark brown (7.5YR 3/2, 3/4; 10YR 3/3). It is sandy loam, loam, or sandy clay loam with 19 to 26 percent clay and 0 to 15 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes ponderosa pine, juniper, sagebrush, rabbitbrush, bitterbrush and perennial grasses.

DEADFALL FAMILY

The Deadfall family consists of moderately deep, well drained soils that formed in material weathered from ultramafic rocks with large amounts of serpentinitic minerals. Deadfall soils are on mountain sideslopes and ridges. Slopes range from 30 to 70 percent. Mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 37° F. Elevations are 6,200 to 8,900 feet. The climate is mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, serpentinitic Typic Cryorthents.

Typical Pedon: Deadfall family very gravelly sandy loam - on a 45 percent southwest-facing slope at 7,600 feet elevation, under a sparse cover of huckleberry oak, rabbitbrush, bunchgrasses and occasional conifers (70 percent gravel pavement). (Colors are for dry soil unless otherwise stated. When described the soil was slightly moist throughout).

O-1/2 to 0 inches; very sparse, scattered, undecomposed litter.

A1-0 to 6 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; 35 percent pebbles, 10 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

C1-6 to 14 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine interstitial pores; 42 percent pebbles, 3 percent cobbles and stones; neutral (pH 7.0); gradual wavy boundary.

C2-14 to 24 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam, brown (10YR 4/3) moist; weak very fine granular structure breaking to single grain; soft, very friable, slightly sticky and nonplastic; common very fine roots; many very fine interstitial pores; 50 percent pebbles, 25 percent cobbles and stones; mildly alkaline (pH 7.5); abrupt wavy boundary.

R-24+ inches; highly fractured ultramafic rock.

Type Location: Shasta-Trinity National Forest; Siskiyou County, California; about 7 miles west of the city of Mt. Shasta, 1 1/2 miles east of Mt. Eddy summit; NW 1/4 NW 1/4 Section 17, T. 40 N., R. 5 W. Hand dug pit along jeep trail.

Range in Characteristics: The thickness of the solum and depth to bedrock ranges from 20 to 40 inches. Rock fragments are mainly pebbles in the A horizon and comprise 35 to 45 percent of the volume. Pebbles and stones cover 50 to 100 percent of the ground surface. The C horizon contains 50 to 85 percent pebbles, cobbles and stones. The mean annual soil temperature ranges from 35 to 40° F., and the mean summer soil temperature varies from 50 to 57° F. There is no effective O horizon.

The A horizon is grayish brown, brown, yellowish brown, pale brown, light yellowish brown, olive brown or pale brown (10YR 5/2, 5/3, 5/4, 6/3, 6/4; 2.5Y 4/4, 6/4, 7/4) dry and very dark grayish brown, dark brown, dark yellowish brown or olive brown (10YR 3/2, 3/3, 4/3, 4/4; 2.5Y 3/4) moist. It is sandy loam or loamy sand with 35 to 45 percent gravel. It has single grain, weak or moderate granular structure. Reaction is neutral to mildly alkaline. The dark colors of a mollic epipedon are only in the upper 3 to 5 inches of some pedons.

The C horizon is yellowish brown, light yellowish gray or pale yellow (10YR 5/4; 2.5Y 6/3, 6/2, 7/4) dry and dark yellowish brown, dark brown, brown, dark grayish brown or olive brown (10YR 3/4, 4/3, 4/4; 2.5Y 4/2, 4/5) dry. It is sandy loam or loam with 50 to 85 percent rock fragments. It is single grain or has weak granular structure. Reaction is neutral to mildly alkaline.

The R horizon is fractured unweathered, serpentinitized peridotite.

Use and Vegetation: Watershed and wildlife. The natural vegetation is perennial bunchgrass, phlox, mountain hemlock, beargrass, a few scattered Jeffery pine, western white pine and red fir. Vegetation is sparse, with gravel pavement over 50 to 100 percent of the ground surface.

DEADWOOD FAMILY

The Deadwood family consists of shallow, well drained soils formed in residuum from metamorphic rocks. These soils occur on mountain sideslopes and narrow ridges. Slopes range from 50 to 90 percent. The mean annual precipitation is 45 to 90 inches and the mean annual temperature is 54°F. Elevations are 500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Dystric Lithic Xerochrepts.

Typical Pedon: Deadwood family extremely gravelly loam - on a 67 percent southeast-facing slope at 1,300 feet elevation under a cover of hardwoods and mixed conifers. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; scattered broad leaves and twigs.

A1-0 to 2 inches; grayish brown (10YR 5/2) extremely gravelly loam, very dark brown (10YR 2/2) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine roots; 70 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bw-2 to 10 inches; light gray (10YR 7/2) extremely gravelly loam, brown (10YR 5/3) moist; weak very fine and fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine and few medium roots; 70 percent pebbles; medium acid (pH 5.9); clear irregular boundary.

C-10 to 16 inches; light gray (2.5Y 7/2) extremely gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, sticky and slightly plastic; few fine and medium roots; 75 percent pebbles; medium acid (pH 5.8); abrupt smooth boundary.

R-16+ inches; highly fractured and hard metamorphic bedrock.

Type Location: Ukonom District, Klamath National

Forest; Siskiyou County, California; about 3 miles southwest of Pony Peak, 4.8 miles northeast of Dillon Mtn. and about 0.2 miles northwest of the Klamath River; N 1/2 Section 29, T. 14 N., R. 6 E. Humboldt Base Meridian.

Range in Characteristics: Deadwood soils are less than 20 inches deep to highly fractured metamorphic bedrock. The mean annual soil temperature is 47 to 59°F. The mean January soil temperature is 34 to 45°F.; the mean July soil temperature is 62 to 83°F. The soil temperature at the bedrock contact exceeds 41°F. from March 31 through mid-December and exceeds 47°F. from mid-March through November 30. The soil is dry between the depths of 4 to 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year. The base saturation is less than 60 percent throughout the soil.

The A horizon is pale brown, grayish brown or dark grayish brown (10YR 4/2, 4/3, 5/2, 6/3) dry, dark yellowish brown, very dark grayish brown, very dark brown, or black (10YR 2/1, 2/2, 3/2, 4/2) moist. It is very gravelly or extremely gravelly loam with 70 to 85 percent coarse fragments. Reaction is medium acid to strongly acid.

The B horizon is light gray, light yellowish brown, or very pale brown (10YR 6/4, 7/2, 7/4) dry, brown (10YR 5/3) moist. It is extremely gravelly loam with 60 to 75 percent coarse fragments. Reaction is medium acid to strongly acid.

The C horizon is light gray (2.5Y 7/2) dry, pale brown (10YR 6/3) moist. It is extremely gravelly loam with 75 to 90 percent coarse fragments. Reaction is medium acid.

Use and Vegetation: Used mainly for wildlife habitat, woodland and watershed. Native vegetation is canyon live oak, madrone, few Douglas-fir and sugar pine, poison oak, modesty flower, snowberry, sword fern, bracken fern and grasses. There is much bare ground.

DECY FAMILY

The Decy family consists of deep and very deep well drained residual soils that formed from mica schist rocks. These soils occur on dissected mountain sideslopes and landslide benches. Slopes range from 30 to 70 percent. The mean annual precipitation is 30 to 55 inches and the mean annual temperature is about 52°F. Elevations are 1,500 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Typic Xerumbrepts.

Typical Pedon: Decy family very gravelly loam - on a 58 percent southeast-facing slope at 4,160 feet elevation, under a cover of mixed conifers, shrubs and herbs. (Colors are for dry soil unless otherwise stated).

Oi-2 to 1 inches; scattered fresh conifer needles and twigs.

Oe-1 to 0 inches; highly decomposed organic material.

A1-0 to 2 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 40 percent pebbles; neutral (pH 7.0); clear smooth boundary.

A2-2 to 8 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and coarse roots; 50 percent pebbles; neutral (pH 7.0); clear wavy boundary.

AB-8 to 13 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; 35 percent pebbles and 5 percent cobbles and stones; slightly acid (pH 6.5); clear smooth boundary.

Bw1-13 to 17 inches; grayish brown (2.5YR 5/2) extremely stony loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; few fine and

medium roots; 35 percent pebbles and 40 percent cobbles and stones; slightly acid (pH 6.5); clear wavy boundary.

Bw2-17 to 60+ inches; light olive gray (5Y 6/2) very stony loam, dark grayish brown (2.5YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few very fine, fine and medium roots; 20 percent pebbles, 20 percent cobbles and 40 percent stones; slightly acid (pH 6.2).

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; SE 1/4 NE 1/4 NE 1/4 Section 32, T. 47 N., R. 9 W.

Range in Characteristics: The soil is 40 to 60+ inches deep to bedrock. The mean annual soil temperature is 47 to 59°F.; the mean January soil temperature is 36 to 45°F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41°F. from March 20 to November 15. The soil between the depths of 9 to 26 inches is dry in all parts from July 15 to October 20, and is moist in some or all parts the rest of the year.

The A horizon is grayish brown, olive gray, dark grayish brown or brown (2.5Y 5/2; 5Y 5/2; 10YR 4/2, 5/2, 5/3). Moist colors are very dark gray, or very dark grayish brown (5Y 3/1; 10YR 3/1, 3/2). It is gravelly loam or very gravelly loam, with 20 to 55 percent gravel. Reaction is slightly acid to neutral.

The Bw horizon is grayish brown, light olive gray or brown (2.5Y 5/2; 5Y 6/2; 10YR 5/3). Moist colors are dark gray, very dark gray or dark grayish brown (2.5Y 4/2; 5Y 3/1; 10YR 4/2). It is very stony loam, very stony sandy loam or extremely stony loam. There are 25 to 30 percent gravels, 10 to 20 percent cobbles and 20 to 40 percent stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used primarily for timber production. Other uses include rangeland and wildlife habitat. Native vegetation includes Douglas-fir, ponderosa pine, white fir, incense cedar, sugar pine, madrone, black oak, white oak, deerbrush, squaw carpet, white-leaf manzanita, Oregon grape, snowberry, vetch, fescue and brome.

DEETZ FAMILY

The Deetz family consists of very deep, somewhat excessively drained soils formed in glacial outwash mixed with volcanic rock and ash sources. Deetz family soils are on glacial outwash fans and plains. Slopes range from 2 to 15 percent. The mean annual precipitation is 25 to 35 inches and the mean annual temperature is about 48°F. Elevations are 4,200 to 4,600 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Ashy, mesic Dystric Xeropsamments.

Typical Pedon: Deetz family gravelly loamy fine sand - on a 4 percent west-facing slope at 3,940 feet elevation, under manzanita, bitterbrush, squaw carpet and incense cedar. (Colors are for dry soil unless otherwise noted. When described, 5/28/74, the soil was moist throughout).

0-1/2 to 0 inches; new and partially decomposed leaves, needles, twigs, bark and other organic debris.

A1-0 to 1 1/2 inches; very dark grayish brown (10YR 3/2) gravelly loamy fine sand, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); abrupt smooth boundary.

A2-1 1/2 to 4 inches; dark brown (10YR 4/3) gravelly loamy fine sand, very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); abrupt smooth boundary.

A3-4 to 7 inches; brown (10YR 5/3) gravelly loamy sand, dark brown (10YR 3/3) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

C1-7 to 12 inches; pale brown (10YR 6/3) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine and medium roots; 15 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

C2-12 to 18 inches; light yellowish brown (10YR 6/4) gravelly loamy sand, dark yellowish brown (10YR

4/4) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many medium, common very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); abrupt wavy boundary.

C3-18 to 28 inches; pale brown (10YR 6/3) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many medium, common very fine, and fine roots; 23 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); clear wavy boundary.

C4-28 to 38 inches; pale brown and very pale brown (10YR 6/3 and 7/3) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 30 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); abrupt wavy boundary.

2C5-38 to 53 inches; pale brown (10YR 6/3) very gravelly sand, strong brown (7.5YR 4/6) moist; single grain; loose, nonsticky and nonplastic; many medium and few very fine and fine roots; 38 percent pebbles and 7 percent cobbles; medium acid (pH 6.0); abrupt wavy boundary.

3C6-53 to 65+ inches; gray and light gray (10YR 6/1 and 7/1) very gravelly sand, color from the sand grains; single grain; loose, nonsticky and nonplastic; many medium and few very fine and fine roots; 48 percent pebbles and 2 percent cobbles; medium acid (pH 6.0).

Type Location: Siskiyou County, California; about 2 miles south of Weed and just north of Black Butte; 1,600 feet south and 1,200 feet east of the northwest corner Section 19, T. 41 N., R. 4 W. It is about 30 feet west of a dirt road.

Range in Characteristics: The soils are 60+ inches deep to stratified clean sand and/or gravel. The mean annual soil temperature is 51 to 55°F.; the mean winter soil temperature is 31 to 36°F.; and the mean annual summer soil temperature is 68 to 74°F. Soil between the depths of 15 and 48 inches is usually dry in all parts from mid-July to mid-October and is moist in some or all parts the rest of the year. Soil temperature at depth of 20 inches exceeds 41°F. from April 1 to December 1 and exceeds 47°F. from April 15 to November 1. The weighted average of the 10 to 40 inch control section is less than 35 percent rock fragments, 35 to 45 percent very coarse and coarse sands, and 20 to 30 percent fine

and very fine sands. Total sand ranges from 70 to 85 percent and silt from 15 to 30 percent. Most of the sands and rock fragments are pyroclastic and include cinders, pumice and ash. The epipedon is 5 to 10 inches thick and is dominated by volcanic ash. The surface soil is too thin or the base saturation is too low to qualify for a mollic or umbric epipedon. The base saturation ranges from 40 to 70 percent in the A horizon and from 15 to 50 percent at depths of 10 to 40 inches in the C horizon and commonly decreases with depth. The NaF pH ranges from 9.6 to 10.7 throughout the soil.

The A horizon is grayish brown, dark grayish brown, very dark grayish brown, brown or dark brown (10YR 3/2, 3/3, 4/2, 5/2, 5/3). Moist colors are black, very dark brown, very dark grayish brown, or dark brown (10YR 2/1, 2/2, 3/2, 3/3) moist. It is sand, loamy fine sand or loamy sand after rubbing and has 15 to 35 percent rock fragments. It is gravelly or stony. It has greater than 40 percent coarse and very coarse sands and less than 25 percent fine and very fine sands. Reaction is very strongly to medium acid.

The AC horizon, when present, is grayish brown, light yellowish brown, pale brown, or light brownish gray (10YR 5/2, 6/2, 6/3, 6/4). Moist colors are olive brown, dark brown or very dark grayish brown (2.5 Y 3/4; 10YR 3/2, 3/3). It is sand or loamy sand after rubbing and has 5 to 35 percent gravel and/or cobbles. Reaction is strongly or medium acid.

The C horizon is light gray, very pale brown, pale brown, or light yellowish brown (10YR 6/3, 6/4, 7/1, 7/2, 7/3, 7/4) weakly to strongly stratified loamy sand or sand. Moist colors are dark grayish brown, brown, or olive brown (10YR 4/2, 5/3; 2.5 Y 4/2, 4/4). It has 5 to 35 percent gravel and cobbles in the upper part and 5 to 60 percent below 40 inches. In some pedons there are layers that are slightly brittle below a depth of 40 inches.

Use and Vegetation: Used primarily for woodland production, recreation and wildlife habitat. Vegetation is white fir, ponderosa pine, Douglas-fir, incense cedar, manzanita, squaw carpet, bitterbrush, dryland sedge, grasses, shrubs and forbs. Many areas have been burned over several times.

DE MASTERS FAMILY

The De Masters family consists of deep, well drained soils that formed in residuum from weathering products from extrusive igneous rocks that include tuff, tuff breccia and andesite. These soils are on mountain sideslopes and footslopes. Slopes range from 9 to 30 percent. The mean annual precipitation is 20 to 40 inches and the mean annual air temperature is about 42° F. Elevations are 4,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid, Pachic Ultic Argixerolls.

Typical Pedon: De Masters family loam - on a 16 percent northwest-facing slope at 5,280 feet elevation, under a cover of white fir, Douglas-fir, incense cedar, chinquapin and vetch. (Colors are for dry soil unless otherwise stated).

O-2 to 0 inches; weakly matted, fresh and slightly decomposed conifer needles and twigs underlain by highly decomposed litter.

A1-0 to 1 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; many fine interstitial pores; neutral (pH 7.0); abrupt smooth boundary.

A2-1 to 5 inches; brown (7.5 YR 4/4) gravelly loam, dark brown (7.5YR 3/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine, common fine and medium roots; few fine tubular, common fine and medium interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 15 inches; brown (7.5YR 4/4) gravelly loam, dark reddish brown (5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; thin clay films in pores and as bridges and very few clay films on ped faces; few very fine, common fine, medium, and coarse roots; few very fine interstitial and tubular pores; slightly acid (pH 6.5); clear wavy boundary.

Bt2-15 to 25 inches; brown (7.5YR 5/4) gravelly loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly

hard, very friable, sticky and plastic; common thin clay films on ped faces and in pores; few very fine and coarse, common fine and medium roots; few very fine and fine interstitial and tubular pores; slightly acid (pH 5.4); gradual wavy boundary.

Bt3-25 to 42 inches; brown (7.5YR 4/4) gravelly loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common thin clay films in pores and on ped faces and few thin clay films as bridges; few very fine, medium and coarse, common fine roots; few very fine tubular pores; slightly acid (pH 6.3); gradual wavy boundary.

Bt4-42 to 47 inches; brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; very few thin clay films on ped faces and in pores; few very fine, fine and medium roots; few very fine tubular pores; medium acid (pH 6.0); clear wavy boundary.

R-47+ inches; highly fractured rock, with pockets of soil and weathered rock in fractures.

Type Location: Gooseneck District, Klamath National Forest; Siskiyou County, California; SW 1/4 SE 1/4 Section 27, T. 47 N., R. 4 W.

Range in Characteristics: De Masters family soils are 40 to 60 inches deep. The mean annual soil temperature is 39 to 47° F.; mean January soil temperature is 32 to 36° F.; mean July soil temperature is 47 to 57° F. The soil temperature at a depth of 20 inches exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. Between the depths of 4 and 12 inches the soil is dry from August 1 until October 15 and is moist in some or all parts the rest of the year. The mollic epipedon is greater than 20 inches thick. Base saturation is 50 to 75 percent in the upper 30 inches of soil.

The A horizon is brown, dark brown, dark yellowish brown, or grayish brown (7.5YR 4/2, 4/4; 10YR 3/3, 4/3, 4/4, 5/2, 5/3). Moist colors are dark brown, very dark grayish brown or very dark brown (7.5YR 3/2; 10YR 2/2, 3/2, 3/3). It is a loam or a gravelly loam. Reaction is medium acid to neutral.

The Bt horizon is brown, dark brown, dark yellowish brown, or grayish brown (7.5YR 4/2, 4/4, 5/4; 10YR 4/3, 4/4, 5/2, 5/3). Moist colors are dark brown or dark reddish brown (5YR 3/2, 3/3; 7.5YR 3/2, 3/4; 10YR 3/3). It is loam, clay loam, cobbly loam, or gravelly loam. Reaction is very strongly acid to medium acid. There is greater than 3 percent clay increase from

overlying horizon.

Use and Vegetation: These soils are primarily used for timber. Native vegetation is ponderosa pine, Douglas-fir, incense cedar, white fir, red fir, snowberry, deerbrush, lupine, squaw carpet, forbs, bottlebrush squirreltail, Idaho fescue and other grasses.

DEVEN FAMILY

The Deven family consists of shallow, well drained soils that formed in materials weathered from andesitic and basaltic rock. Deven family soils are on mountain sideslopes and lava flows on volcanic uplands. Slopes range from 0 to 30 percent. The mean annual precipitation is 9 to 12 inches and the mean annual temperature is about 52° F. Elevations are 4,200 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey, montmorillonitic, mesic Lithic Argixerolls.

Typical Pedon: Deven family loamy sand - on a 15 percent south-facing slope at 4,950 feet elevation, under juniper, big sagebrush, western mountain mahogany, rubber rabbitbrush and few perennial grasses. (Colors are for dry soil unless otherwise stated).

A1-0 to 1 inch; brown (10YR 5/3) loamy sand, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine interstitial pores; 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

Bt1-1 to 8 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, sticky and plastic; few thin clay films on ped faces; common very fine and few fine roots; common very fine tubular pores; 5 percent cobbles; slightly acid (pH 6.5), clear smooth boundary.

Bt2-8 to 15 inches; brown (10YR 4/3) cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few thin clay films on ped faces and in pores; few fine roots; common very fine tubular pores; 15 percent cobbles; slightly acid (pH

6.5); abrupt wavy boundary.

R-15+ inches; hard, slightly fractured basaltic or andesitic flow rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 2/3 miles north of Bray, California, 1/2 mile south of Orr Mountain; SW 1/4 SE 1/4, Section 16, T. 44 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 45 to 60°F.; mean January soil temperature is 32 to 47°F.; and mean July soil temperature is 54 to 72°F. The soil temperature exceeds 41°F. from April 1 to November 25 and exceeds 47°F. from May 1 to November 1. The soil between a depth of 6 inches and the lithic contact is dry in all parts from June 10 to October 15. The mollic epipedon is 7 to 19 inches thick. Base saturation is greater than 75 percent throughout the soil.

The A horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark brown or very dark grayish brown (10YR 2/2, 3/2). It is loamy sand or fine sandy loam with 8 to 10 percent clay and 0 to 5 percent gravel and cobbles. Reaction is slightly acid to neutral.

The Bt horizon is dark grayish brown, dark brown, grayish brown or brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is clay loam, cobbly clay loam, sandy clay loam or cobbly sandy clay loam with 20 to 38 percent clay and 0 to 30 percent gravel and cobbles. The weighted average of the family control section is greater than 35 percent clay. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat. Native vegetation includes juniper, few ponderosa pine, big sagebrush, mountain mahogany, rubber rabbitbrush and perennial grasses.

DUBAKELLA FAMILY

The Dubakella family consists of moderately deep and deep well drained soils that formed in residuum from weathered ultramafic rock. Dubakella family soils are on mountain sideslopes, benches and ridges. Slopes range from 15 to 70 percent. The mean annual precipitation is 30 to 80 inches and the mean annual temperature is about 53° F. Elevations are 1,000 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, mesic Mollic Haploxeralfs.

Typical Pedon: Dubakella family silt loam - on a 44 percent northeast-facing slope at 2,300 feet elevation, under Douglas-fir, Jeffrey pine, incense cedar, sugar pine, shrubs and forbs. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; fresh loose conifer needles.

A1-0 to 3 inches; reddish brown (5YR 5/4) silt loam, dark reddish brown (5YR 3/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; neutral (pH 6.5); clear smooth boundary.

A2-3 to 12 inches; reddish brown (5YR 5/4) gravelly silt loam, dark reddish brown (5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; neutral (pH 6.5); gradual smooth boundary.

Bt1-12 to 17 inches; reddish brown (5YR 4/4) very gravelly clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse subangular blocky structure; hard, firm, sticky and plastic; few thin clay films on ped faces; common roots; neutral (pH 6.5); clear wavy boundary.

Bt2-17 to 33 inches; yellowish brown (10YR 5/4) very cobbly clay, dark brown (7.5YR 3/2) moist; strong medium and coarse angular blocky structure; extremely hard, extremely firm, very sticky and very plastic; common moderately thick clay films on ped faces; few roots; neutral (pH 6.5); gradual broken boundary.

C-33 to 36 inches; light yellowish brown (10YR 6/4) cobbly silty clay loam, brown or dark brown (10YR 4/3) moist; massive; slightly hard, friable, sticky

and plastic; very few roots; neutral (pH 6.4); abrupt broken boundary.

R-36+ inches; hard serpentinitic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; West Grider Creek, 1.5 miles West of Seiad Valley post office; NW 1/4 SE 1/4 Section 15, T. 46 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is 20 to 60 inches. Mean annual soil temperature is 48 to 57° F.; mean January soil temperature is 38 to 43° F.; mean July soil temperature is 58 to 76° F.; the soil temperature exceeds 41° F. from February 15 to December 15 and exceeds 47° F. from March 15 to November 15. The soil between the depths of 6 to 18 inches is dry in all parts from July 15 to October 20 in most years and moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown, dark grayish brown, dark brown, dark yellowish brown, grayish brown, brown or reddish brown (10YR 3/2, 4/2, 4/3, 4/4, 5/2; 7.5YR 5/4; 5YR 5/4). Moist colors are black, very dark grayish brown or dark reddish brown (10YR 2/1, 3/2; 5YR 3/2, 3/3, 3/4). It is silt loam, loam or clay loam with 15 to 35 percent coarse fragments. Reaction is mildly alkaline or neutral.

The Bt horizon is yellowish brown, dark brown, brown, strong brown, yellowish red, or reddish brown (10YR 5/3, 5/4; 7.5YR 4/4, 5/6; 5YR 4/4, 4/6). Moist colors are dark brown or dark reddish brown (10YR 3/3; 7.5YR 3/2, 4/4; 5YR 3/4). It is clay or clay loam with 35 to 50 percent rock fragments. Reaction is slightly to mildly acid.

The C horizon when present is yellowish brown, light yellowish brown or brown (10YR 5/4, 6/4; 7.5YR 5/4). Moist colors are brown, dark brown or dark yellowish brown (10YR 4/3, 4/4; 7.5YR 4/4). It is loam, clay loam or silty clay loam with 35 to 70 percent rock fragments. Reaction is slightly acid to moderately alkaline.

Use and Vegetation: Used mainly for watershed, range, wildlife habitat and timber production. Native vegetation is sparse stands of Douglas-fir, Jeffrey pine, incense cedar, sugar pine, madrone, white oak, poison oak, prince pine, star flower, bracken fern and Idaho fescue.

DUMPS

Dumps consist of uneven piles of waste rock from dredging operations. It is mainly on flood plains and in channels of the major rivers and streams. The hazard of erosion and deposition are very high and the areas are

subject to flooding under abnormal conditions. Dumps without major reclamation cannot support plants. The area is used for wildlife habitat and watershed.

ENDLICH FAMILY

The Endlich family consists of deep or very deep, well drained residual soils formed from granitic or metamorphic parent material. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 60 to 90 inches, mostly in the form of snow, and the mean annual air temperature is about 38° F. Elevations are 6,200 to 8,300 feet. The climate is high elevation mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, mixed Dystric Cryochrepts.

Typical Pedon: Endlich family loam - on a 50 percent north-facing slope at 6,700 feet elevation, under a cover of red fir and mountain hemlock. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; matted conifer needles and twigs.

A1-0 to 1 inches; dark brown (7.5YR 3/2) loam, black (7.5YR 2/0) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine interstitial pores; 5 percent pebbles; extremely acid (pH 4.3); abrupt smooth boundary.

A2-1 to 4 inches; brown (7.5YR 5/4) gravelly fine sandy loam, dark brown (7.5YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and moderate medium roots; few medium, and common very fine and fine pores; 17 percent pebbles; very strongly acid (pH 4.5); clear irregular boundary.

Bw1-4 to 13 inches; yellowish brown (10YR 5/4) very gravelly fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and common medium and coarse roots; common very fine, fine, and medium interstitial pores; 45 percent pebbles and 5 percent cobbles; very strongly acid (pH 5.0); clear smooth boundary.

Bw2-13 to 21 inches; light yellowish brown (10YR 6/4) extremely cobbly fine sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and many medium and coarse roots; few medium, common fine, and many very fine interstitial pores; 50 percent pebbles and 30 percent cobbles; strongly acid (pH 5.5); clear wavy boundary.

C1-21 to 32 inches; light yellowish brown (10YR 6/4) extremely cobbly fine sandy loam, dark brown (10YR 4/3) moist; massive; soft, loose, nonsticky and nonplastic; few fine and coarse, common medium roots; many very fine interstitial pores; 40 percent pebbles and 40 percent cobbles; very strongly acid (pH 4.5); gradual wavy boundary.

C2-32 to 48 inches; light yellowish brown (10YR 6/4) extremely cobbly loamy fine sand, dark brown (10YR 4/3) moist; massive; soft, loose, nonsticky and nonplastic; few fine roots; many very fine interstitial pores; 50 percent pebbles and 40 percent cobbles; very strongly acid (pH 4.5). Clear smooth boundary.

R-48+ inches; slightly fractured gneiss.

Type Location: Oak Knoll District, Klamath National Forest; Jackson County, Oregon; near Cow Creek Glade; NE 1/4 NW 1/4 Section 18, T. 41 S., R. 1 W.

Range in Characteristics: The soil is 40 to 60+ inches deep in metamorphic or granitic rock. The mean annual soil temperature is 32 to 46° F.; the mean summer soil temperature is 40 to 46° F. where an O horizon is present, and 50 to 55° F. where no O horizon is present. The soil temperature exceeds 41° F. from May 15 to November 10, and is greater than 47° F. from July 1 to October 10. The soil between the depths of 8 and 23 inches is dry in all parts from August 10 to October 10. The base saturation is assumed to be less than 50 percent throughout the soil.

The A horizon is brown, strong brown, or dark yellowish brown (7.5YR 3/2, 4/2, 4/3, 5/4, 5/6; 10YR 4/3, 4/4, 5/3). Moist colors are dark reddish brown, dark brown or very dark grayish brown (5YR 3/4; 7.5YR 2/0, 3/2, 3/4; 10YR 3/2, 3/3). It is loam, gravelly loam, gravelly fine sandy loam or very gravelly loam, with 5 to 50 percent gravel, and 0 to 25 percent cobbles. Reaction is medium to very strongly acid.

The Bw horizon is brown, light brown, yellowish brown, pale brown, or light yellowish brown (7.5YR 5/4, 6/4; 10YR 5/4, 6/3, 6/4). Moist colors are dark brown, dark yellowish brown, or yellowish brown (7.5YR 4/4; 10YR 3/4, 4/3, 4/4, 5/4). It is loam, sandy loam, fine sandy loam or very fine sandy loam, and is gravelly, very or extremely gravelly, cobbly and very or extremely cobbly. There can be a slight clay increase in the B horizon. There are 10 to 50 percent gravels, and 0 to 40 percent cobbles. The family control section

has a weighted average of greater than 35 percent rock fragments. Reaction is medium to very strongly acid.

The C horizon is pale brown, light yellowish brown, or very pale brown (10YR 6/3, 6/4, 7/3, 7/4). Moist colors are dark brown, dark yellowish brown, brown, or yellowish brown (10YR 4/3, 4/4, 5/3, 5/4). It is loam, sandy loam, or fine sandy loam, and is gravelly, very or extremely gravelly, cobbly and very or extremely

cobbly. There is a slight clay decrease in the C horizon. There are 10 to 35 percent gravels, and 10 to 50 percent cobbles. Reaction is very strongly acid to slightly acid.

Use and Vegetation: Used for watershed, wildlife, recreation, and limited timber production. The native vegetation is red fir, mountain hemlock, western white pine, pinemat manzanita, pussy paws, pyrola and chimaphila.

ETCHEN FAMILY

The Etchen family soils consist of deep and very deep, well drained soils that formed in residuum and colluvium. These soils occur on terraces, mountain footslopes and glacial outwash deposits. Slopes range from 2 to 30 percent. The mean annual precipitation is about 12 to 20 inches and the mean annual temperature is about 41° F. Elevations are 4,600 to 6,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Mollic Haploxeralfs.

Typical Pedon: Etchen family sandy loam - on a 2 percent slope at 4,660 feet elevation, under a cover of Jeffrey pine, western juniper, shrubs, forbs and grasses. (Colors are for dry soil unless otherwise stated).

O-0 to 1 inch; fresh needles and twigs.

A1-0 to 2 inches; light brownish gray (10YR 6/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; neutral (pH 7.0); clear wavy boundary.

A2-2 to 6 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

A3-6 to 9 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine interstitial pores; neutral (pH 6.6); clear smooth boundary.

Bt1-9 to 18 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few thin clay films on pores; few very fine and fine roots; common fine interstitial and tubular and few very fine tubular pores; slightly acid (pH 6.5); abrupt smooth bound-

ary.

Bt2-18 to 40 inches; pinkish gray (7.5YR 6/2) extremely gravelly sandy clay loam, brown (7.5YR 3/4) moist; strong fine angular blocky structure; very hard, friable, sticky and plastic; many moderately thick clay films on ped faces and as bridges; common very fine and fine interstitial pores; 75 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5).

R-40+ inches; highly weathered andesite.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; SW 1/4 SW 1/4 NW 1/4 Section 5, T. 43 N., R. 1 W.

Range in Characteristics: Etchen family soils are 40 to 60+ inches deep that formed in residuum and colluvium. The mean annual soil temperature is 38 to 48° F. The soil temperature at a depth of 20 inches exceeds 41° F. from May 1 to November 10 and exceeds 47° F. from June 10 to October 20. The soils are moist between the depths of 4 and 12 inches except during the period of July 1 to October 1.

The A horizons are dark grayish brown, brown, dark brown, grayish brown, or pale brown (10YR 4/2, 4/3, 5/2, 5/3, 6/2, 6/3) dry. Moist colors are dark brown, very dark brown or very dark grayish brown (7.5YR 3/2, 10YR 2/2, 3/2). It is loam or sandy loam. Reaction is medium acid to neutral.

The Bt horizons are pinkish gray, very pale brown, pale brown, light yellowish brown or yellowish brown (7.5YR 6/2; 10YR 7/4, 6/3, 6/4, 5/4) dry. Moist colors are brown, dark brown, or dark yellowish brown (7.5YR 3/4, 4/4; 10YR 3/3, 3/4, 4/3). It is very gravelly or extremely gravelly sandy clay loam, very gravelly clay loam or very gravelly sandy loam with 40 to 80 percent rock fragments. Reaction is slightly acid to neutral.

Use and Vegetation: These soils are used primarily for timber production and grazing. They also provide wildlife habitat and recreation. Native vegetation consists of ponderosa pine, western juniper, bitterbrush, mountain mahogany, bottlebrush squirreltail cheatgrass, bluegrass, Idaho fescue, rubber rabbitbrush Parry rabbitbrush and big sage.

GERLE FAMILY

The Gerle family consists of moderately deep or deep well drained residual soils formed from granitic parent material. The soils occur on mountain sideslopes, footslopes and ridges. Slopes range from 15 to 90 percent. The mean annual precipitation is 50 to 100 inches and the mean annual temperature is about 41° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Coarse-loamy, mixed, frigid Typic Xerumbrepts.

Typical Pedon: Gerle family gravelly sandy loam - on a 62 percent west-facing slope at 5,300 feet elevation, under a cover of white fir, snowbrush and various other shrubs. (Colors are for dry soil unless otherwise stated).

O-1 1/2 to 0 inches; weakly matted white fir needles.

A1-0 to 5 inches; very dark grayish brown (10YR 3/2) gravelly fine sandy loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, very friable, slightly sticky, and nonplastic; abundant roots; slightly acid (pH 6.1); abrupt smooth boundary.

A2-5 to 11 inches; brown (10YR 5/3) gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak fine sub-angular blocky structure; soft, very friable, slightly sticky and nonplastic; common roots; medium acid (pH 5.8); gradual smooth boundary.

Bw-11 to 20 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common roots; strongly acid (pH 5.5); clear wavy boundary.

C-20 to 35 inches; light gray (2.5Y 7/2) very gravelly fine sand, moist colors are a mixture of the 2.5Y hue; massive; loose, loose, nonsticky and nonplastic; very few roots; strongly acid (pH 5.4); gradual smooth boundary.

Cr-35+ inches; soft, weathered diorite.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Thompson

Ridge, 6.5 miles north of Jackson Peak; NW 1/4 SW 1/4 Section 3, T. 18 N., R. 7 E.

Range in Characteristics: The soil is 20 to 40 inches deep to soft, weathered bedrock (gruss). The mean annual soil temperature is 35 to 47° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 43 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20, and is greater than 47° F. from May 20 to October 20. The soil between the depths of 12 and 35 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly to strongly acid. Base saturation is less than 50 percent throughout the soil.

The A horizon is brown, very dark grayish brown, dark brown, dark yellowish brown, dark grayish brown, grayish brown, or yellowish brown (7.5YR 5/2, 5/4; 10YR 3/2, 3/3, 4/2, 4/3, 4/4, 5/2, 5/3, 5/4). Moist colors are dark brown, black, very dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 2/1, 2/2, 3/2, 3/3). It is loam, fine sandy loam, sandy loam, or loamy sand, and may be gravelly. There are less than 30 percent gravels. Reaction is strongly to slightly acid.

The Bw horizon is dark yellowish brown, brown, yellowish brown, pale brown, or light yellowish brown (10YR 4/3, 4/4, 5/3, 5/4, 6/3, 6/4). Moist colors are dark brown, dark yellowish brown, brown, or yellowish brown (7.5YR 3/2, 3/4; 10YR 3/3, 3/4, 4/3, 4/4, 5/3, 5/4). It is fine sandy loam or loamy sand and may be gravelly, with 5 to 30 percent gravels. Reaction is medium to slightly acid.

The C horizon is dark yellowish brown, brown, yellowish brown, pale brown, light yellowish brown, light brownish gray, light gray, or pale yellow (10YR 4/4, 5/3, 5/4, 5/3, 5/4; 2.5Y 6/2, 6/4, 7/2, 7/4). The texture is sandy loam, loamy sand or fine sand and may be gravelly or cobbly with 5 to 30 percent gravels and 5 to 20 percent cobbles. Reaction is medium to slightly acid.

The Cr horizon is soft, highly weathered granitic parent material, generally gruss.

Use and Vegetation: Used primarily for timber production. The native vegetation includes white fir, red fir, mountain hemlock, Douglas-fir, incense cedar, greenleaf manzanita, pinemat manzanita and bush chinquapin.

GILLIGAN FAMILY

The Gilligan family consists of deep, somewhat excessively drained residual soils formed from granitic parent material. These soils occur on steep to very steep mountain sideslopes. Slopes range from 30 to 90 percent. The mean annual precipitation is 30 to 70 inches and the mean annual temperature is about 51° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Coarse-loamy, mixed, mesic Dystric Xerochrepts.

Typical Pedon: Gilligan family sandy loam - on a 75 percent northeast-facing slope at 3,360 feet elevation, under a mixed conifer and oak cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; matted conifer needles and broad leaves.

A1-0 to 2 inches; grayish brown (2.5Y 5/2) sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 5 percent pebbles; neutral (pH 6.8); clear wavy boundary.

A2-2 to 11 inches; light brownish gray (2.5Y 6/2) fine sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine subangular blocky structure; very friable, nonsticky and nonplastic; common very fine, fine and medium roots; 5 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bw1-11 to 22 inches; light gray (2.5Y 7/2) fine sandy loam, grayish brown (2.5Y 5/2) moist; weak fine subangular blocky structure; very friable, slightly sticky and nonplastic; common very fine, fine, medium and coarse roots; 5 percent pebbles; slightly acid (pH 6.3); gradual smooth boundary.

Bw2-22 to 29 inches; light gray (2.5Y 7/2) fine sandy loam, grayish brown (2.5Y 5/2) moist; massive; very friable, slightly sticky and nonplastic; common very fine roots; 5 percent pebbles; medium acid (pH 6.0); clear wavy boundary.

C-29 to 47 inches; white (2.5Y 8/2) fine sandy loam, light brownish gray (2.5Y 6/2) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; 5 percent pebbles; medium acid (pH 6.0); clear irregular boundary.

Cr-47+ inches; paralithic contact to weathered granitic rock.

Type Location: Salmon River District, Klamath National Forest; Siskiyou County, California; 1.0 miles south of Summerville Site; SW 1/4 NE 1/4 Section 14, T. 37 N., R. 11 W.

Range in Characteristics: The soil is 40 to 60 inches deep to soft, weathered bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January temperature is 35 to 45° F.; the mean July temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and exceeds 47° F. from March 20 to November 15. The soil between the depths of 8 and 25 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. Soil reaction is strongly acid to neutral.

The A horizon is very dark grayish brown, dark grayish brown, grayish brown, brown, pale brown, or light brownish gray (10YR 3/2, 4/2, 4/3, 5/2, 5/3, 6/3; 2.5Y 5/2, 6/2). Moist colors are very dark brown, very dark grayish brown, dark brown or dark grayish brown (10YR 2/2, 3/2, 3/3; 2.5Y 4/2). It is loam, sandy loam or fine sandy loam and may be gravelly. Reaction is neutral to strongly acid.

The Bw horizon is brown, strong brown, yellowish brown, light brownish gray, pale brown, light yellowish brown, very pale brown, yellow or light gray (7.5YR 5/4, 5/6; 10YR 5/3, 5/4, 6/2, 6/3, 6/4, 7/4, 7/6; 2.5Y 6/2, 7/2). Moist colors are brown, strong brown, dark grayish brown, dark yellowish brown, yellowish brown, and grayish brown (7.5YR 4/2, 4/4, 5/4, 5/6; 10YR 4/2, 4/3, 4/4, 5/2, 5/3, 5/4; 2.5Y 4/2, 5/2). It is loam, sandy loam, or fine sandy loam, and may be gravelly, with less than 35 percent coarse fragments. Reaction is slightly to strongly acid.

The C horizon is light brown, reddish yellow, pale brown, light yellowish brown, very pale brown, light brownish gray, light gray or white (7.5YR 6/4, 6/6; 10YR 6/3, 6/4, 7/3, 7/4, 8/3, 8/4; 2.5Y 6/2, 7/2, 8/2). Moist colors are brown, strong brown, dark yellowish brown, yellowish brown, light yellowish brown, dark grayish brown, olive brown, grayish brown, light olive brown, or light brownish gray (7.5YR 4/4, 4/6, 5/4, 5/6; 10YR 4/3, 5/3, 5/4, 5/6, 6/4; 2.5Y 4/2, 4/4, 5/2, 5/4, 6/2, 6/4). It is loam, fine sandy loam, sandy loam or loamy sand. It may be gravelly or very gravelly. Clay content decreases by 2 to 3 percent from the Bw to the C horizon. Reaction is slightly to medium acid.

The Cr horizon is soft, highly weathered granitic bedrock

Use and Vegetation: Used primarily for timber production, watershed, wildlife habitat and range. The native vegetation includes incense cedar, white fir, Douglas-fir, sugar pine, ponderosa pine, whiteleaf manzanita,

deerbrush, madrone, black oak, canyon live oak, mountain dogwood, rose, currant, sword fern, California hazelnut, Pacific trillium, snowberry, various forbs and grasses.

GOLDRIDGE FAMILY

The Goldridge family consists of very deep, well drained residual soils formed from granitic rocks. These soils occur on moderately steep to steep mountain sideslopes and ridges. Slopes range from 15 to 50 percent. The mean annual precipitation is 45 to 65 inches and the mean annual temperature is about 50° F. Elevations are 2,000 to 4,500 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Typic Haploxerults.

Typical Pedon: Goldridge family gravelly loam - on a 45 percent southwest-facing slope at 2,850 feet elevation, under a cover of Douglas-fir, tanoak, oak and madrone. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; decomposing conifer needles and broadleaves.

A1-0 to 4 inches; light brown (7.5YR 6/4) gravelly loam, reddish brown (5YR 4/4) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; 20 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bt1-4 to 14 inches; reddish yellow (7.5YR 7/6) clay loam, yellowish red (5YR 5/6) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; common roots; few thin clay films on ped faces; 2 percent pebbles; strongly acid (pH 5.5); gradual smooth boundary.

Bt2-14 to 30 inches; reddish yellow (5YR 6/8) clay loam, yellowish red (5YR 5/8) moist; moderate medium and coarse subangular blocky structure; very hard, firm, sticky and plastic; common roots; continuous moderately thick clay films on ped faces; 1 percent pebbles; strongly acid (pH 5.2); diffuse boundary.

Bt3-30 to 41 inches; reddish yellow (7.5YR 7/6) clay loam, reddish yellow (5YR 6/6) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and plastic; common roots; common thin clay films on ped faces; 3 percent pebbles; strongly acid (pH 5.3); diffuse boundary.

C1-41 to 60 inches; yellow (10YR 8/6) loam, brownish yellow (10YR 6/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few roots; 5 percent pebbles; strongly acid (pH 5.1); diffuse boundary.

C2-60 to 80+ inches; very pale brown (10YR 8/4) sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, slightly sticky and nonplastic; very few roots; 7 percent pebbles; strongly acid (pH 5.1).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Dillon/Clear Creek area; NW 1/4 NW 1/4 Section 19 (approximate location; area has not been surveyed), T. 14 N., R. 6 E.

Range in Characteristics: The soil is 60+ inches deep to bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; The mean July soil temperature is 55 to 70° F. The soil temperature exceeds 41° F. from March 20 to November 15. The soil between the depths of 7 and 19 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly to very strongly acid. Base saturation is less than 35 percent 50 inches below the upper boundary of the argillic horizon.

The A horizon is reddish yellow, brown, or light brown (7.5YR 5/4, 6/4, 6/6). Moist colors are dark brown, reddish brown, or brown (2.5YR 3/4; 5YR 4/3, 4/4; 7.5YR 4/4). It is loam or clay loam, and may be gravelly, with up to 35 percent gravel. Reaction is strongly to medium acid.

The Bt horizon is light reddish yellow or reddish yellow (5.YR 6/4, 6/8; 7.5YR 7/6). Moist colors are reddish brown, reddish yellow or yellowish red (5YR 4/4, 5/6, 5/8, 6/6, 6/8). It is sandy clay loam or clay loam with 1 to 10 percent gravel. Reaction is very strongly to slightly acid.

The C horizon is very pale brown, or yellow (10YR 8/4, 8/6). Moist colors are strong brown, reddish yellow, brownish yellow, or light yellowish brown, (7.5YR 5/6, 6/6; 10YR 6/4, 6/6). It is sandy loam, loam, or sandy clay loam, with 5 to 15 percent gravel. Reaction is very strongly to slightly acid.

The top of the R horizon is generally greater than 80 inches deep.

Use and Vegetation: Used primarily for timber production. The native vegetation includes Douglas-fir, tanoak, madrone, dogwood, deerbrush, Oregon grape and chinquapin.

GOLDRIDGE FAMILY, GRAVELLY

The Goldridge family, gravelly, consists of deep and very deep well drained soils that formed in colluvium and residuum from metamorphic rocks. These soils occur on mountain sideslopes, footslopes, landslide deposits and broad ridges. Slopes range from 30 to 50 percent. The mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 52° F. Elevations are 600 to 4,500 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Typic Haploxerults.

Typical Pedon: Goldridge family, gravelly, very gravelly loam - on a 50 percent southwest-facing slope at 2,850 feet elevation under Douglas-fir, hardwoods and shrubs. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; fresh and partially decomposed needles, twigs and leaves.

A1-0 to 2 inches; strong brown (7.5YR 5/6) very gravelly loam, dark brown (7.5YR 3/2) moist; strong very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common roots; 55 percent pebbles; slightly acid (pH 6.4); abrupt smooth boundary.

A2-2 to 4 inches; reddish yellow (7.5YR 6/6) very gravelly loam, brown or dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common roots; 55 percent pebbles; slightly acid (pH 6.4); clear smooth boundary.

BA-4 to 10 inches; reddish yellow (7.5YR 6/6) gravelly loam, yellowish red (5YR 5/6) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few thin clay films on ped faces; common roots; 30 to 35 percent pebbles; medium acid (pH 6.0); gradual smooth boundary.

Bt1-10 to 19 inches; reddish yellow (5YR 6/6) gravelly clay loam, yellowish red (5YR 5/6) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common thin clay films on ped faces and many moderately thick clay films in pores; common roots; 25 percent pebbles; medium acid

(pH 5.8); diffuse boundary.

Bt2-19 to 28 inches; reddish yellow (5YR 6/6) very gravelly clay loam, yellowish red (5YR 5/6) moist; weak coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few thin clay films on ped faces and common thin clay films in pores; few roots; 40 percent pebbles; medium acid (pH 6.0) gradual smooth boundary.

2BC-28 to 60+ inches; reddish yellow (5YR 6/8) very gravelly clay loam, yellowish red (5YR 5/6) moist; massive; hard, firm, sticky and plastic; very few roots; 40 percent pebbles; slightly acid (pH 6.3).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County California; SE 1/4 NW 1/4 Section 1, T. 15 N., R. 6 E.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 47 to 58° F.; mean January soil temperature is 34 to 46° F.; mean July soil temperature is 57 to 76° F. The soil temperature exceeds 41° F. from February 10 to December 10 and exceeds 47° F. from March 1 to November 20. The soil between the depths of 8 to 20 inches is dry from July 15 to October 20 in most years and moist in some or all parts the rest of the year. It has a base saturation of less than 35 percent 50 inches below the upper boundary of the argillic horizon.

The A horizon is strong brown or reddish yellow (7.5YR 5/6, 6/6). Moist colors are dark brown or brown (7.5YR 3/2, 4/4). It is very gravelly or extremely gravelly loam with 50 to 70 percent gravel. Reaction is neutral or slightly acid.

The B horizon is reddish yellow (7.5YR 6/6; 5YR 6/6, 6/8). Moist colors are yellowish red or red (5YR 5/6; 2.5YR 5/6). It is gravelly or very gravelly loam or clay loam with 20 to 50 percent gravel. Reaction is medium or slightly acid.

Use and Vegetation: Used mainly as watershed, wildlife habitat, range and timber production. Native vegetation is Douglas-fir, sugar pine, California black oak, canyon live oak, big leaf maple, tanoak, madrone, poison oak, sword fern, bracken fern, deerbrush, bunchberry, thimbleberry and iris.

GUEMES FAMILY

The Guemes family consists of moderately deep, well drained residual soils formed from serpentinitic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 90 percent. The mean annual precipitation is 45 to 70 inches and the mean annual temperature is about 51° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, mesic Typic Haploxeralfs.

Typical Pedon: Guemes family very gravelly loam - on a 55 percent northeast-facing slope at 3,450 feet elevation, under a mixed-conifer, huckleberry oak cover. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; weakly matted conifer needles.

A1-0 to 2 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many roots; 70 percent pebbles; slightly acid (pH 6.1); abrupt smooth boundary.

A2-2 to 7 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; 50 percent pebbles; slightly acid (pH 6.5) clear smooth boundary.

Bt1-7 to 12 inches; very pale brown (10YR 7/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common roots; few thin clay films on ped faces; 25 percent pebbles; neutral (pH 6.6); gradual smooth boundary.

Bt2-12 to 28 inches; reddish yellow (7.5YR 6/6) gravelly clay loam, strong brown (7.5YR 5/6) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and plastic; common roots; com-

mon thin clay films on ped faces; 15 percent pebbles; slightly acid (pH 6.4); abrupt irregular boundary.

R-28+ inches; hard serpentinitic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; 5 miles northwest of Happy Camp; NE 1/4 Section 19, T. 17 N., R. 7 E.

Range in Characteristics: The soil is 20 to 40 inches deep to hard bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 9 and 27 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly acid to neutral. Base saturation is less than 75 percent in some part of the upper 30 inches of the argillic or to a lithic contact.

The A horizon is light grayish brown, yellowish brown, or very pale brown (10YR 5/4, 6/2, 7/3). Moist colors are dark yellowish brown, dark grayish brown or dark brown (10YR 3/3, 4/2, 4/4, 5/3). It is gravelly, very gravelly or extremely gravelly sandy loam or loam, with 20 to 70 percent gravel. Reaction is slightly acid.

The Bt horizon is reddish yellow, brown, or very pale brown (7.5YR 6/6; 10YR 4/3, 5/4, 7/4). Moist colors are strong brown, dark yellowish brown, or yellowish brown (7.5YR 5/6; 10YR 4/4, 5/4). It is gravelly or very gravelly loam or clay loam, with 15 to 50 percent gravel and 15 to 25 percent cobbles. Reaction is slightly acid to neutral.

The R horizon is hard, fractured serpentinite.

Use and Vegetation: Used primarily for watershed, range, timber production and wildlife habitat. The native vegetation includes Douglas-fir, sugar pine, Jeffrey pine, incense cedar, knobcone pine, huckleberry oak, greenleaf manzanita, snowbrush and beargrass.

HADES FAMILY

The Hades family consists of moderately deep and deep, well drained soils that formed in material weathered from basaltic or andesitic volcanic rocks. These soils occur on volcanic mountain sideslopes. Slopes range from 15 to 50 percent. The annual precipitation is 12 to 15 inches and the mean annual temperature is about 42° F. Elevations are 4,400 to 6,400 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Pachic Argixerolls.

Typical Pedon: Hades family gravelly loam - on a 25 percent west-facing slope at 5,440 feet elevation, under rabbitbrush, mountain mahogany, bitterbrush, ponderosa pine, Idaho fescue, cheatgrass, brome and bluegrass. (Colors are for dry soils unless otherwise stated)

A1-0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist, weak fine platy structure; soft, very friable, non-sticky and nonplastic; few very fine roots; common very fine interstitial pores; 20 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

A2-2 to 5 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; few very fine and fine interstitial pores; 10 percent pebbles and 2 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 21 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few thin clay films on ped faces; few very fine, fine and medium roots; few very fine tubular pores; 5 percent pebbles and 2 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt2-21 to 48 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate

medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderate thin and few moderately thick clay films on ped faces and in pores; few very fine and medium roots; few very fine and fine tubular pores; 5 percent pebbles, 5 percent cobbles and 2 percent stones; neutral (pH 7.0); abrupt smooth boundary.

R-48+ inches; hard moderately fractured basaltic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 4.5 miles northeast of Bray, California; NE corner NW 1/4 SW 1/4 Section 25, T. 45 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is 20 to 60 inches. Mean annual soil temperature is 38 to 46° F.; mean January soil temperature is 33 to 36° F.; mean July soil temperature is 47 to 58° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 8 and 25 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. The mollic epipedon is greater than 20 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches of the soil and greater than 50 percent below.

The A horizon is dark grayish brown, brown, or grayish brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3). It is loam or gravelly loam with 13 to 18 percent clay. Reaction is slightly acid to neutral.

The Bt horizon is brown or dark brown (10YR 4/3, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is loam or clay loam with 18 to 35 percent clay and 5 percent gravel and 5 percent cobbles. Reaction is neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes greenleaf manzanita, bitterbrush, mountain mahogany, rabbitbrush, ponderosa pine, juniper, incense cedar, cheatgrass, bottlebrush squirreltail, blue bunch wheatgrass, stipa, poas and fescue.

HELVETIA FAMILY

The Helvetia family consists of moderately deep, well drained residual soils that formed in materials weathered from basic igneous and metamorphic rocks. These soils occur on mountain sideslopes, broad ridges and benches. Slopes range from 15 to 70 percent. The mean annual precipitation is 25 to 35 inches and the mean annual temperature is about 52° F. Elevations are 3,500 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine, mixed, mesic Ultic Argixerolls.

Typical Pedon: Helvetia family gravelly clay loam - on a 35 percent south-facing slope at 4,200 feet elevation, under a cover of ponderosa pine, incense cedar, Douglas-fir, canyon live oak and black oak. (Colors are for dry soil unless otherwise stated).

A1-0 to 6 inches; brown (10YR 4/3) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; 25 percent pebbles; neutral (pH 7.0); clear wavy boundary.

Bt1-6 to 17 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films in pores; common very fine and fine roots; few very fine tubular pores; 20 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

Bt2-17 to 23 inches; pale brown (10YR 6/3) gravelly silty clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common thin and moderately thick clay films on ped faces and in pores; common fine and medium roots; common very fine and few fine tubular pores; 30 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt3-23 to 35 inches; pale brown (10YR 6/3) gravelly silty clay, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky struc-

ture; hard, firm, sticky and plastic; common moderately thick and few thick clay films on ped faces and in pores; few very fine roots; common very fine and fine tubular pores; 30 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

Cr-35+ inches; soft, highly weathered schist.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; Wildcat Creek SW 1/4 NE 1/4 Section 22, T. 40 N., R. 9 W.

Range in Characteristics: The soil is 20 to 40 inches deep to a lithic or paralithic contact. Mean annual soil temperature is 47 to 59° F.; mean January soil temperature is 36 to 45° F.; mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and exceeds 47° F. from March 20 to November 15. The soil between a depth of 7 and 20 inches is dry in all parts from July 15 to October 20 in most years, and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. The base saturation is assumed to be less than 75 percent throughout the upper 30 inches of soil.

The A horizon is brown, dark brown, or grayish brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 3/2, 3/3). It is a loam, gravelly loam, clay loam, or gravelly clay loam. There are 10 to 25 percent gravels present. Reaction is medium acid to neutral.

The Bt horizon is olive brown, dark grayish brown, yellowish brown, or pale brown (2.5Y 4/2, 4/4; 10YR 5/4, 6/3). Moist colors are dark brown, brown, dark yellowish brown, or olive brown (10YR 3/3, 4/3, 4/4; 2.5Y 4/4). It is gravelly clay loam, gravelly silty clay loam, or gravelly silty clay, with 20 to 30 percent gravel. Reaction is medium acid to neutral.

Use and Vegetation: Used primarily for timber production and rangeland. Native vegetation includes ponderosa pine, incense cedar, Douglas-fir, canyon live oak, black oak, lupine, vetch and stipa.

HOLLAND FAMILY

The Holland family consists of deep or very deep, well drained soils that formed in alluvium or residuum from granitic, ultramafic or metamorphic rocks. These soils occur on mountain sideslopes, river terraces and benches. Slopes range from 30 to 50 percent. Mean annual precipitation is 30 to 90 inches and the mean annual air temperature is about 51°F. Elevations are 1,200 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Ultic Haploxeralfs.

Typical Pedon: Holland family very gravelly loam - on a 33 percent southeast-facing slope at 1,500 feet elevation under a mixed conifer cover at 1,500 feet elevation. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; fresh and partially decomposed conifer needles and twigs.

A1-0 to 1 1/2 inches; pink (7.5YR 7/4) very gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common roots; 36 percent pebbles; medium acid (pH 5.7); clear smooth boundary.

AB-1 1/2 to 8 inches; reddish yellow (7.5YR 7/6) gravelly loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common roots; 20 percent pebbles; strongly acid (pH 5.9); gradual smooth boundary.

Bt1-8 to 22 inches; reddish yellow (5YR 6/6) gravelly clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, sticky, and plastic; common roots; 20 percent pebbles; strongly acid (pH 5.3); gradual smooth boundary.

Bt2-22 to 41 inches; reddish yellow (5YR 6/8) gravelly heavy clay loam, yellowish red (5YR 5/6) moist; moderate medium subangular blocky structure; very hard, firm, sticky, and plastic; many moderately thick clay films on ped faces; few roots; 25 percent pebbles; strongly acid (pH 5.3); gradual smooth boundary.

Bt3-41 to 60+ inches; reddish yellow (7.5YR 6/6) very

gravelly clay loam, strong brown (7.5YR 5/6) moist; weak coarse subangular blocky structure; hard, firm, sticky and plastic; few roots; 25 percent pebbles; strongly acid (pH 5.3).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; about 6 miles northeast of Happy Camp; NE 1/4 NE 1/4 Section 20, T. 17 N., R. 8 E.

Range in Characteristics: Holland family soils are 40 to 60+ inches deep. The mean annual soil temperature is 47 to 59°F. The mean January soil temperature is 33 to 42°F. and the mean July soil temperature is 62 to 73°F. The soil temperature at a depth of 20 inches exceeds 41°F. from March 31 through mid-December and exceeds 47°F. from mid-March through November 30. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizons are brown, pink, reddish yellow, pale brown, grayish brown, or light brownish gray (7.5YR 5/4, 7/4, 7/6; 10YR 5/2, 5/3, 6/3,) dry, dark brown, brown, reddish brown, dark grayish brown, or very dark grayish brown (10YR 3/3, 4/3; 7.5YR 3/2, 4/4; 5YR 4/4; 2.5YR 4/5; 2.5Y 3/2, 4/2) moist. They are gravelly or very gravelly loams or sandy loams with 10 to 50 percent gravel by volume. Reaction is slightly to strongly acid.

The Bt horizons are light red, red, yellowish red, reddish yellow, brown or strong brown (2.5YR 6/6, 4/6; 5YR 4/6, 5/6, 6/6, 6/8; 7.5YR 5/4, 5/6, 6/6, 7/6) dry, brown, strong brown, reddish brown, yellowish red (7.5YR 4/4, 4/6, 5/6; 2.5YR 4/4; 5YR 4/6, 5/6) moist. They are sandy clay loams, or gravelly or very gravelly clay loams in the Bt horizons. B horizons above the Bt horizons may be loams or sandy loams. Common to many thin or moderately thick clay films are on ped faces, lining pores and as bridges. Coarse fragments in the control section are less than 35 percent by volume. Reaction is slightly to strongly acid.

Use and Vegetation: These soils are primarily used for timber. They also provide wildlife habitat and recreation. Native vegetation consists of Douglas-fir, ponderosa pine, sugar pine, incense cedar, black oak, white oak, madrone, deerbrush, poison oak, squaw carpet, currant, Oregon grape, bracken fern, longleaf mahonia, snowberry, rose, modesty flower, whiteleaf manzanita, other forbs and grasses.

ILLER FAMILY

The Iller family consists of very deep, well drained soils formed in volcanic ash deposits over colluvium and material weathered from tuff, tuff breccias or extrusive igneous bedrock. These soils occur on mountain sideslopes and volcanic uplands. Slopes range from 5 to 30 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is about 42°F. Elevations are 5,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Medial over loamy-skeletal, mixed, frigid Andic Xerumbrepts.

Typical Pedon: Iller family sandy loam - on a 16 percent southwest-facing slope at 6,000 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise noted).

O-1 to 0 inches; new and partially decomposed needles, twigs and leaves.

A1-0 to 4 inches; grayish brown (10YR 5/2) sandy loam, dark brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 5 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

A2-4 to 12 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; common medium and few fine and very fine roots; few very fine interstitial pores; 13 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary.

Bw1-12 to 23 inches; yellowish brown (10YR 5/4) sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine medium and coarse roots; few very fine interstitial pores; 15 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

Bw2-23 to 27 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine interstitial pores; few thin clay films as bridges; 20 percent pebbles; neutral (pH 6.8); clear wavy boundary.

2Bwb-27 to 60+ inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; 15 percent pebbles and 55 percent cobbles and stones; few very fine roots; few very fine interstitial pores; 15 percent pebbles and 55 percent cobbles; slightly acid (pH 6.5).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; SW 1/4 SW 1/4 SW 1/4 Section 1, T. 44 N., R. 3 W.

Range in Characteristics: The volcanic ash mantle is 20 to 30 inches thick. Total soil depth is greater than 60 inches. The mean annual soil temperature is 42 to 47°F. The soil temperature exceeds 41°F. from June 1 to October 20. The soil is dry in the 8 to 24 inch control section from mid-July to mid-October and is moist in some or all parts the rest of the year.

The A horizon is reddish brown, brown, grayish brown or yellowish brown (5YR 5/3; 7.5YR 5/2, 5/4; 10YR 5/2, 5/3, 5/4). Moist colors are dark reddish brown, dark brown or very dark grayish brown (5YR 3/3; 7.5YR 3/2; 10YR 3/2, 3/3). It is sandy loam or gravelly loam. Reaction is medium acid to neutral.

The Bw horizon is brown, yellowish brown, light brownish gray, pale brown, reddish brown or light yellowish brown (5YR 5/4; 7.5YR 5/4; 10YR 5/4, 6/2, 6/3, 6/4). Moist colors are reddish brown, dark brown, dark grayish brown or brown (5YR 4/4; 7.5YR 3/4; 10YR 4/2, 4/3). It is sandy loam or gravelly sandy loam. Reaction is medium acid to neutral.

The 2Bwb horizon is reddish brown, pinkish gray, yellowish brown or light yellowish brown (5YR 5/3, 5/4; 7.5YR 6/2; 10YR 5/4, 6/4). Moist colors are dark reddish brown, reddish brown, dark grayish brown or brown (5YR 3/3, 4/4; 10YR 4/2, 4/3). It is very gravelly loam, very gravelly sandy loam, very cobbly loam or extremely cobbly loam. Reaction is medium to slightly acid.

Use and Vegetation: Used mainly for timber. Native vegetation is white fir, red fir, ponderosa pine, Douglas-fir at lower elevations and incense cedar. Shrubs are wild currant, greenleaf manzanita, squaw carpet, snowbrush and chinquapin.

INVILLE FAMILY

The Inville family consists of moderately deep and deep, well drained soils that formed in material weathered from metamorphic and igneous rocks. Inville family soils occur on mountain sideslopes, ridges and volcanic uplands. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 65 inches and the mean annual temperature is about 42° F. Elevations are 4,900 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Ultic Haploxeralfs.

Typical Pedon: Inville family gravelly loam - on an 18 percent northeast-facing slope at 5,040 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise stated.)

A1-0 to 2 inches; brown (10YR 4/3) gravelly loam, dark brown (7.5YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 18 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

A2-2 to 7 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; 8 percent pebbles; neutral (pH 6.7); gradual smooth boundary.

Bt1-7 to 13 inches; reddish brown (5YR 5/3) gravelly loam, reddish brown (5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; 15 percent pebbles and 5 percent cobbles; slightly acid (pH 6.3); clear smooth boundary.

Bt2-13 to 23 inches; reddish brown (5YR 5/3) very cobbly loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; many moderately thick clay films on ped faces and in pores; few very fine, fine, and medium roots; 10 percent pebbles and 25 percent cobbles; strongly acid (pH 5.5); clear wavy boundary.

Bt3-23 to 30 inches; reddish brown (5YR 5/3) extremely gravelly loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and

slightly plastic; common moderately thick clay films on ped faces, in pores, and bridging; few fine and medium roots; 55 percent pebbles and 10 percent cobbles; strongly acid (pH 5.5); gradual wavy boundary.

Cr-30+ inches; highly weathered igneous rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 6 miles west of Macdoel, 1/2 mile east of Juanita Lake Rd., 1/2 mile northeast of Juanita Lake; SW 1/4 SE 1/4 Section 17, T. 46 N., R. 2 W.

Range in Characteristics: Depth to a lithic or paralithic contact is 20 to 60 inches. Mean annual soil temperature is 39 to 46°F.; mean January soil temperature is 30 to 36° F.; and mean July soil temperature is 47 to 55° F. The soil temperature exceeds 41°F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 7 and 22 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, yellowish brown, pale brown, and brown (10YR 4/2, 4/3, 5/3, 5/4, 6/3; 7.5YR 5/4). Moist colors are black, very dark brown, dark yellowish brown, brown, and dark brown (10YR 2/1, 2/2, 3/3, 3/4, 4/3; 7.5YR 3/2, 3/4). It is loam, gravelly loam, cobbly loam, stony sandy loam or very gravelly sandy loam with 10 to 20 percent clay and 6 to 70 percent gravel, cobbles and stones. Reaction is medium acid to mildly alkaline.

The Bt horizon is brown, yellowish brown, pale brown, light yellowish brown, very pale brown, light brown, or reddish brown (10YR 5/3, 5/4, 6/3, 6/4, 7/3, 7/4; 7.5YR 5/4, 6/4; 5YR 5/3). Moist colors are very dark grayish brown, dark brown, dark yellowish brown, yellowish brown, strong brown, dark reddish brown, or reddish brown (10YR 4/3, 4/4, 5/4, 5/6; 7.5YR 3/4, 4/4, 4/6; 5YR 3/4, 4/4). It is gravelly to extremely gravelly loam or very cobbly to extremely cobbly loam with 15 to 30 percent clay and 20 to 75 percent gravel, cobbles, and stones. The weighted average of the family control section is 18 to 30 percent clay and greater than 35 percent gravel, cobbles, and stones. Reaction is strongly acid to mildly alkaline.

Use and Vegetation: Used primarily for timber pro-

duction, wildlife habitat and watershed. Native vegetation includes Douglas-fir, ponderosa pine, red fir, knobcone pine, white fir, incense cedar, sugar pine, greenleaf manzanita, squaw carpet, pinemat manzanita, chin-

quapin, wildrose, gooseberry, snowberry, rabbitbrush, currant (ribies), snowbrush, bitterbrush, huckleberry oak, fescue, brome, bottlebrush squirreltail and carex.

JAYAR FAMILY

The Jayar family consists of moderately deep and deep, well drained soils formed in residuum or colluvium from metamorphic and granitic rocks. These soils occur on mountain sideslopes and colluvial slopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 30 to 100 inches and the mean annual temperature is 43°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Dystric Xerochrepts.

Typical Pedon: Jayar family very gravelly loam - on a 30 percent northwest-facing slope at 5,550 feet elevation, under a red fir, mountain hemlock cover. (Colors are for dry soil unless otherwise noted.)

O-2 to 0 inches; matted conifer needles.

A1-0 to 2 inches; brown (10YR 4/3) very gravelly loam, dark brown (7.5YR 3/2) moist; strong very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; 60 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bw1-2 to 10 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (7.5YR 4/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 40 percent pebbles; slightly acid (pH 6.3); clear wavy boundary.

Bw2-10 to 24 inches; very pale brown (10YR 7/4) very gravelly loam, yellowish brown (10YR 5/4) moist; weak very fine and fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; 40 percent pebbles; slightly acid (pH 6.3); gradual smooth boundary.

C-24 to 34 inches; pale yellow (2.5Y 8/3) very gravelly sandy loam, light yellowish brown (2.5Y 6/3) moist; massive; soft, friable, slightly sticky and nonplastic; 60 percent pebbles; slightly acid (pH 6.4); abrupt irregular boundary.

R-34+ inches; fractured hard metamorphic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; about 1.9 miles east of Bare Mtn., near the Munson Mine on Thompson Ridge; SW 1/4 SE 1/4 Section 33, T. 12 N., R. 7 E., Humboldt Base Meridian.

Range in Characteristics: The Jayar family soils are 20 to 60 inches deep to fractured metamorphic or granitic bedrock. The mean annual soil temperature is about 37 to 47°F. The mean January soil temperature is 30 to 39°F.; the mean July soil temperature is 41 to 62°F. The soil temperature at a depth of 21 inches exceeds 41°F. from April 1 until November 1 and exceeds 47°F. from April 15 to November 1. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is brown or pale brown (10YR 4/3, 6/3) dry. Moist colors are very dark brown, dark brown, or yellowish brown (7.5YR 3/2; 10YR 3/2, 5/4). It is a gravelly loam, very gravelly loam, or very gravelly sandy loam with 30 to 60 percent coarse fragments. Reaction is slightly acid.

The Bw horizon is very pale brown, pale brown, or yellowish brown (10YR 5/4, 6/3, 7/3, 7/4) dry. Moist colors are brown, dark brown, yellowish brown, or brownish yellow (10YR 4/3, 5/4, 6/6; 7.5YR 4/3). It is gravelly loam, very gravelly loam, or very gravelly sandy loam with 30 to 45 percent coarse fragments. Reaction is slightly to strongly acid.

The C horizon is very pale brown or pale yellow (10YR 7/3, 7/4; 2.5Y 8/3) dry, brown, very pale brown, or light yellowish brown (10YR 5/3, 7/5; 2.5Y 6/3) moist. It is a very gravelly loam or very gravelly sandy loam with 40 to 60 percent coarse fragments. Reaction is slightly to strongly acid.

Use and Vegetation: Used for commercial timber production, watershed, and wildlife habitat. Native vegetation is forests of red fir, white fir, ponderosa pine, Douglas-fir, and mountain hemlock. Shrubs include snowbrush, sadler oak, pinemat manzanita, greenleaf manzanita, snowberry, currant, strawberry shinleaf, princes pine and lupine.

KANG FAMILY

The Kang family consists of moderately deep, well drained, soils formed in residuum or colluvium from serpentinite. These soils occur on broad ridges, sideslopes and colluvial footslopes. Slopes range from 9 to 50 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is 50° F. Elevations are 2,000 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, mesic Pachic Argixerolls.

Typical Pedon: Kang family gravelly sandy clay loam - on a 42 percent southeast-facing slope at 4,050 feet elevation, under a cover of Jeffrey pine, incense cedar, wedgeleaf ceanothus, California fescue and other perennial grasses. (Colors are for dry soil unless otherwise stated).

O-2 to 0 inches, fresh conifer needles becoming more decomposed with depth.

A-0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly sandy clay loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, sticky and slightly plastic; common very fine and few fine roots; common very fine and fine interstitial pores; 25 percent pebbles and 8 percent cobbles and stones; neutral (pH 7.0); abrupt wavy boundary.

Bt1-3 to 6 inches; very dark grayish brown (10YR 3/2) gravelly clay, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few thin and moderately thick clay films lining pores and on faces of peds; 15 percent pebbles and 8 percent cobbles and stones; neutral (pH 7.2); abrupt wavy boundary.

Bt2-6 to 12 inches; very dark grayish brown (10YR 3/2) cobbly clay, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine, fine and medium roots; common very fine and fine tubular pores; few thin and moderately thick clay films lining pores and on faces of peds; 15 percent pebbles, 10 percent cobbles and 10 percent stones; neutral (pH 7.2); clear wavy boundary.

Bt3-12 to 22 inches; dark brown (10YR 3/3) stony clay, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure; very hard, firm, sticky

and plastic; few very fine and fine and common medium and coarse roots; common very fine and fine tubular pores; many moderately thick and thick clay films lining pores, on faces of peds, and as bridges; 15 percent pebbles, 10 percent cobbles and 20 percent stones; mildly alkaline (pH 7.4); clear wavy boundary.

Bt4-22 to 27 inches; dark brown (7.5YR 4/4) very stony clay, dark brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; very hard, firm, sticky and plastic; few very fine and fine and common medium roots; few very fine and fine tubular pores; many thick clay films lining pores, on ped faces, and as bridges; 35 percent pebbles, 10 percent cobbles and 30 percent stones; mildly alkaline (pH 7.4); abrupt wavy boundary.

R-27+ inches; hard serpentinite bedrock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 7 miles northeast of Callahan, 1 mile south of Lovers Leap, and 100 yards north of Kangaroo Creek; NE 1/4 NE 1/4 Section 8, T. 40 N., R. 7 W., Mount Diablo Meridian.

Range in Characteristics: Kang family soils are 20 to 40 inches deep. The mean annual soil temperature is 47° to 57° F. The mean January soil temperature is 36° to 41° F.; the mean July soil temperature is 57° to 71° F. The soil temperature at a depth of 20 inches exceeds 41° F. from February 20 through December 5 and exceeds 47° F. from March 20 through November 15. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is very dark grayish brown, dark grayish brown, grayish brown, or dark brown (10YR 3/2, 4/2, 5/2; 7.5YR 4/4). Moist colors are very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/2, 3/1, 3/2; 7.5YR 3/2). It is a gravelly or very gravelly sandy clay loam or clay loam. Clay content varies from 25 to 35 percent. Rock fragments are 15 to 35 percent by volume. Reaction is neutral to mildly alkaline.

The Bt horizons are very dark grayish brown, dark brown, brown, or dark yellowish brown (10YR 3/2, 3/3, 4/3, 4/4; 7.5YR 4/4). Moist colors are very dark gray, very dark grayish brown, dark brown or dark reddish brown (10YR 3/1, 3/2, 3/3; 7.5YR 3/2, 3/3, 4/4; 5YR 3/3) moist. They are gravelly or very gravelly clay loam,

or very cobbly or very stony clay with 35 to 75 percent coarse fragments. Reaction is neutral to mildly alkaline.

Use and Vegetation: Used mainly for wildlife, range

and some timber production. Native vegetation consists of sparse Jeffrey pine, incense cedar, buckbrush, rabbitbrush, bottlebrush squirreltail, California fescue, Idaho fescue and other perennial grasses.

KILMERQUE FAMILY

The Kilmerque family consists of deep to very deep, well drained soils that formed in alluvium from basalt and andesitic rock. Kilmerque family soils are on volcanic upland terraces and fans. Slopes range from 2 to 9 percent. The mean annual precipitation is 15 to 25 inches and the mean annual temperature is about 44°F. Elevations are 4,600 to 5,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Coarse-loamy, mixed, frigid Ultic Haploxerolls.

Typical Pedon: Kilmerque family sandy loam - on a 3 percent sloping flat at 4,667 feet elevation, under ponderosa pine, bitterbrush, dwarf sagebrush, bluegrass and figwort. (Colors are for dry soil unless otherwise stated.)

A-0 to 1 inch; grayish brown (10YR 5/2) sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; medium acid (pH 6.0); clear smooth boundary.

Bw1-1 to 9 inches; grayish brown (10YR 5/2) loamy sand, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bw2-9 to 15 inches; grayish brown (10YR 5/2) loamy sand, very dark grayish brown (10YR 3/2) moist, weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and coarse roots; neutral (pH 7.0); gradual smooth boundary.

C-15 to 63+ inches; pale brown (10YR 6/3) loamy sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine

medium and coarse roots; neutral (pH 7.0).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 2 miles east-southeast of Bray, 1/2 mile north of Dry Lake; about 25 yards south of Bray-Tennant Road; SE 1/4 NE 1/4 Section 30, T. 44 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 45 to 47°F.; mean January soil temperature is 34 to 36°F.; and mean July soil temperature is 55 to 58°F. The soil temperature exceeds 41°F. from March 25 to November 25 and exceeds 47°F. from April 25 to November 5. The soil between the depths of 12 and 37 inches is dry in all parts from July 25 to October 20 and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. Base saturation ranges from 50 to 75 percent throughout the upper 30 inches of soil and greater than 50 percent below.

The A horizon is dark grayish brown or grayish brown (10YR 4/2, 5/2). Moist colors are very dark brown or very dark grayish brown (10YR 2/2, 3/2). It is loamy sand or sandy loam with 4 to 10 percent clay and 0 to 5 percent gravel. Reaction is strongly acid to slightly acid. The Bw horizon is grayish brown, brown, or pale brown (10YR 5/2, 5/3, 6/3). Moist colors are very dark brown or dark brown (10YR 2/2, 3/3). It is loamy sand or sandy loam with 8 to 12 percent clay and 0 to 5 percent gravel. Reaction is medium acid to neutral.

The C horizon is brown or pale brown (10YR 5/3, 6/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is loamy sand to very gravelly loamy sand or sandy loam with 8 to 10 percent clay and 0 to 40 percent gravel. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation is ponderosa pine, white fir, bitterbrush, dwarf sagebrush, rabbitbrush, bluegrass, bottlebrush squirreltail and figwort.

MERKEL FAMILY

The Merkel family consists of very deep, well drained soils formed from ultramafic glacial till. These soils occur on ground moraines. Slopes range from 2 to 30 percent. The mean annual precipitation is 40 to 55 inches and the mean annual air temperature is about 41° F. Elevations are 5,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Typic Xerochrepts.

Typical Pedon: Merkel family very gravelly loam - on a 25 percent east-facing slope at 5,440 feet elevation, under a cover of white fir, Jeffrey pine, western white pine, huckleberry oak and greenleaf manzanita. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; matted conifer needles and twigs.

A1-0 to 2 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine and fine, and common medium roots; 25 percent pebbles and 10 percent cobbles, stones and boulders; neutral (pH 6.7); clear smooth boundary.

A2-2 to 10 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine and fine and common medium roots; 10 percent pebbles and 35 percent cobbles, stones and boulders; neutral (pH 7.0); clear wavy boundary.

Bw-10 to 22 inches; brown (7.5YR 5/4) very cobbly loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly sticky and nonplastic; common very fine, fine and medium roots; few thin clay films as bridges; 10 percent pebbles and 35 percent cobbles, stones and boulders; neutral (pH 7.0); gradual wavy boundary.

C1-22 to 35 inches; yellowish brown (10YR 5/4) very cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly sticky and nonplastic; few very fine, fine and medium roots; 15 percent

pebbles and 40 percent cobbles, stones and boulders; mildly alkaline (pH 7.5); gradual wavy boundary.

C2-35 to 60+ inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly sticky and nonplastic; few very fine roots; 15 percent pebbles and 65 percent cobbles, stones and boulders; mildly alkaline (pH 7.5).

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; Cabin Meadow Creek; NW 1/4 NW 1/4 Section 36, T. 41 N., R. 7 W.

Range in Characteristics: The soil is greater than 60 inches deep to weathered glacial till. The mean annual soil temperature is 36 to 46° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 47 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20, and exceeds 47° F. from May 20 to October 20. The soil between the depths of 8 and 25 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly acid to mildly alkaline.

The A horizon is brown or strong brown (7.5YR 5/4, 5/6). Moist colors are brown or dark brown (7.5YR 4/4). It is very gravelly loam. Reaction slightly acid to neutral.

The Bw horizon is brown (7.5YR 5/4). Moist colors are brown or dark brown (7.5 YR 4/4, 5/4). It is very cobbly loam. Reaction is neutral.

The C horizon is brown, yellowish brown, pale brown, light yellowish brown, or light olive brown (10YR 5/3, 5/4, 6/3, 6/4; 2.5Y 5/4, 6/4). Moist colors are dark yellowish brown, or olive brown (10YR 3/4, 3/6, 4/4, 4/6; 2.5Y 4/4). It is very cobbly or extremely cobbly sandy loam, with 10 to 15 percent gravels and 40 to 75 percent rock fragments. Reaction is mildly alkaline.

Use and Vegetation: Used primarily for watershed, timber production, range, wildlife, and recreation. The native vegetation includes white fir, Jeffrey pine, western white pine, huckleberry oak, greenleaf manzanita, western serviceberry, sagebrush, various forbs and grasses.

MORICAL FAMILY

The Morical family consists of moderately deep and deep well drained soils that formed in residuum from metamorphic and igneous rocks. Morical family soils occur on mountain sideslopes, footslopes and volcanic upland flats. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and the mean annual air temperature is about 50° F. Elevations are 3,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Mollic Haploxeralfs.

Typical Pedon: Morical family gravelly sandy loam - on a 35 percent southwest-facing slope at 4,550 feet elevation, under a cover of ponderosa pine, Douglas-fir and pinemat manzanita. (Colors are for dry soil unless otherwise stated).

0-1 to 0 inches; loosely matted dried, undecomposed conifer and broadleaf needles, leaves, and twigs. Abrupt smooth boundary.

A1-0 to 3 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish-brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 15 percent pebbles and 4 percent cobbles and stones; neutral (pH 7.0); clear smooth boundary.

A2-3 to 8 inches; light brownish gray (10YR 6/2) sandy loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; 10 percent pebbles and 2 percent cobbles and stones; medium acid (pH 6.7); abrupt smooth boundary.

Bt1-8 to 14 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak, fine, angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few moderately thick clay films in pores and as bridges; common very fine, fine, medium, and coarse roots; 5 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt2-14 to 25 inches; yellow (10YR 7/6) gravelly sandy loam, strong brown (7.5YR 5/6) moist; massive;

hard, firm, slightly sticky and slightly plastic; common moderately thick clay films as bridges, and many thick clay films lining pores; few very fine, fine, medium, and coarse roots; 15 percent pebbles; slightly acid (pH 6.2); clear smooth boundary.

Cr-25+ inches; weathered gabbro, with common thick clay films as bridges and in interstitial pores.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; near Kangaroo Lake; NE 1/4 NE 1/4 Section 9, T. 40 N., R. 7 W.

Range in Characteristics: Morical family soils are 20 to 60 inches deep. The mean annual soil temperature is 47° to 54° F. The mean January soil temperature is 33° to 47° F.; the mean July soil temperature is 57° to 64° F. The soil temperature at a depth of 20 inches exceeds 41° F. from March 1 through mid-December and exceeds 47° F. from mid-March through November 30. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is grayish brown, light brownish gray, brown, or yellowish brown (10YR 5/2, 5/3, 5/4, 6/2) dry, and very dark brown, very dark grayish-brown, or dark yellowish brown (10YR 2/1, 3/2, 3/3, 3/4) moist. It is loam gravelly sandy loam or sandy loam. Reaction is medium acid to mildly alkaline.

The Bt horizon is dark yellowish brown, brown, light yellowish brown or strong brown (10YR 4/4, 5/3, 5/4, 6/4; 7.5YR 5/6, 7/6) dry, and dark brown, yellowish brown, or dark reddish-brown (10YR 4/3, 5/4; 7.5YR 4/4, 5/4, 5/6; 5YR 3/4) moist. It is a loam, gravelly sandy loam, clay loam, or sandy clay loam. Clay content is 22 to 32 percent. Clay films are few to many, thin to thick on ped faces and pores. Reaction is slightly acid to neutral.

The Cr horizon is strong brown and reddish yellow (7.5YR 5/6, 6/6) dry, weathered igneous rock.

Use and Vegetation: Used for timber and grazing, also providing wildlife habitat and recreation. Native vegetation is ponderosa pine, incense cedar, Douglas-fir, juniper, sagebrush, rabbitbrush, squaw carpet, greenleaf manzanita, deerbrush, lupine and bottlebrush squirreltail.

NANNY FAMILY

The Nanny family consists of deep and very deep well drained soils that formed from depositional mixed till and residuum from metamorphic and igneous rocks. Nanny family soils are on ground and lateral moraines. Slopes range from 2 to 50 percent. The mean annual precipitation is 40 to 90 inches and the mean annual temperature is about 41°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid, Typic Xerumbrepts.

Typical Pedon: Nanny family cobbly loamy sand - on a 48 percent north-facing slope at 6,000 feet elevation, under white fir, red fir and shrubs. (Colors are for dry soil unless otherwise stated).

O-3 to 0 inches; fresh and partially decomposed needles and twigs.

A1-0 to 2 inches; dark brown (10YR 3/3) very gravelly sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; 55 percent pebbles and 5 percent stones; medium acid (pH 6.0); clear wavy boundary.

A2-2 to 12 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, and common medium and fine roots; common very fine and fine interstitial pores; 40 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

Bt1-12 to 25 inches; very pale brown (10YR 7/4) very gravelly sandy loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few thin clay films as bridges; common very fine, fine and medium roots; common very fine interstitial pores; 35 percent pebbles and 4 percent cobbles; medium acid (pH 5.8); clear smooth boundary.

Bt2-25 to 46 inches; pale yellow (2.5Y 7/4) very gravelly sandy loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few thin clay films as bridges; few very fine roots; few fine interstitial pores; 35 percent pebbles and 2 percent cobbles; medium acid (pH 5.8); clear smooth boundary.

R-46+ inches; hard metamorphic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; SE 1/4 NE 1/4 Section 18, T. 47 N., R. 9W.

Range in Characteristics: Depth to a lithic or paralithic contact is 40 to 60+ inches. Mean annual soil temperature is 35 to 46°F.; mean January soil temperature is 31 to 35°F.; mean July soil temperature is 42 to 57°F. The soil temperature exceeds 41°F. from April 15 to November 20 and exceeds 47°F. from May 15 to October 20. The soil between the depths of 16 to 49 inches is dry from August 1 to October 15 in most years and moist in some or all parts of the year.

The A horizon is brown, dark brown, dark grayish brown, yellowish brown, or dark yellowish brown (10YR 3/3, 4/2, 4/4, 5/4; 7.5YR 5/4). Moist colors are very dark grayish brown, dark brown or very dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 2/2, 3/2). It is very gravelly loam, very gravelly sandy loam, loam or loamy sand. Reaction is strongly to slightly acid.

The Bt horizon is pale yellow, light yellowish brown, brownish yellow, very pale brown or light brownish gray (10YR 6/6, 7/4; 2.5Y 6/2, 6/4, 7/4). Moist colors are light olive brown, dark yellowish brown, olive brown, brown or dark grayish brown (10YR 3/4, 4/3, 4/4; 2.5Y 4/2, 4/4, 5/4). It is very gravelly sandy loam or very gravelly loam. Reaction is strongly to slightly acid.

Use and Vegetation: Used for watershed, wildlife habitat, range and timber production. Native vegetation is red fir, white fir, incense cedar, Douglas-fir, sadler oak, thimbleberry, snowbrush, pinemat manzanita, California huckleberry, longleaf mahonia, greenleaf manzanita, bittercherry, serviceberry, modesty flower, dogbane, Oregon grape, forbs and grasses.

NEUSKE FAMILY

The Neuske family consists of moderately deep or deep well drained soils that formed in residuum from extrusive igneous rocks. Neuske family soils occur on structural benches. Slopes range from 2 to 30 percent. The mean annual precipitation is 12 to 20 inches and the mean annual air temperature is about 41°F. Elevations are 4,600 to 6,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Mollic Haploxeralfs.

Typical Pedon: Neuske family loam - on a 5 percent southwest-facing slope at 5,030 feet elevation, under a cover of ponderosa pine. (Colors are for dry soil unless otherwise noted.)

O-3 to 0 inches; organic mat of fresh pine needles, more decomposed with increasing depth. Abrupt smooth boundary.

A1-0 to 2 inches; brown (7.5YR 5/4) loam, dark reddish brown (5YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine interstitial pores; 5 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

A2-2 to 8 inches; brown (7.5YR 5/4) loam, dark reddish brown (5YR 3/4) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine and medium roots; many very fine interstitial and few very fine tubular pores; 5 percent pebbles and 5 percent cobbles; slightly acid (pH 5.2); clear smooth boundary.

Bt1-8 to 16 inches; brown (7.5YR 5/4) cobbly loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and common fine and medium roots; few medium tubular pores; few thin clay films on ped faces; 5 percent pebbles and 25 percent cobbles; slightly acid (pH 6.5); gradual smooth boundary.

Bt2-16 to 27 inches; yellowish brown (10YR 5/4) loam, brown and dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine, medium and coarse roots; common very fine tubular pores; many thin clay films on ped faces and as bridges; 10 percent cobbles; slightly acid (pH

6.5); gradual smooth boundary.

C-27 to 45 inches; yellowish brown (10YR 5/4) loam, brown and dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and common medium roots; common very fine tubular and interstitial pores; common thin clay films on ped faces and as bridges; slightly acid (pH 6.5).

R-45+ inches; moderately hard rock.

Type Location: Gooseneck District, Klamath National Forest, Siskiyou County, California; about 1 mile SE from Garner Butte Summit and about 1 mile NE from Garner Mountain Summit; NW 1/4 SW 1/4 Section 35, T. 44 N., R. 1 E.

Range in Characteristics: Neuske family soils are 20 to 60 inches deep. The mean annual soil temperature is 41 to 47° F. The soil temperature at a depth of 20 inches exceeds 41° F. from May 5 to November 10 and exceeds 47° F. from June 10 to October 20. The soil is dry between the depth of 12 to 24 inches from mid-July to mid-October and is moist in some or all parts the remainder of the year.

The A horizon is dark grayish brown, grayish brown or brown (7.5YR 5/4; 10YR 4/2, 4/3, 5/2, 5/3) dry, dark reddish brown, black, or very dark brown (5YR 3/3, 3/4; 10YR 2/0, 2/2) moist. It is loam or sandy loam. Reaction is slightly acid.

The Bt horizon is yellowish brown, brown or dark brown (10YR 5/4; 7.5YR 4/4, 5/4) dry, dark brown or dark reddish brown (5YR 3/4; 7.5YR 3/4, 4/4) moist. It is loam, cobbly loam, clay loam or sandy clay loam. Clay content is 15 to 35 percent. Clay films vary from few to many, thin to moderately thick on ped faces and pores. Reaction is slightly acid to neutral.

The C horizon is brown or yellowish brown (7.5YR 4/4, 5/4; 10YR 5/4) dry, dark yellowish brown, brown or dark brown (7.5YR 3/2, 3/4, 4/4; 10YR 4/4) moist. It is loam or sandy loam. Reaction is neutral.

Use and Vegetation: These soils are used for woodland, grazing, wildlife habitat and recreation. Native vegetation consists of ponderosa pine, western juniper, mountain mahogany, bitterbrush, bottlebrush squirreltail cheatgrass, bluegrass, Idaho fescue, rubber rabbitbrush and Parry rabbitbrush.

OLETE FAMILY

The Olete family consists of deep or very deep, somewhat excessively drained residual soils formed from ultramafic rocks. These soils occur on steep to extremely steep mountainsides. Slopes range from 30 to 70 percent. The mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 52° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Typic Xerochrepts.

Typical Pedon: Olete family very gravelly loam - on a 60 percent east-facing slope at 4,000 feet elevation, under a cover of huckleberry oak, Jeffrey pine and incense cedar. (Colors are for dry soil unless otherwise stated.)

A-0 to 3 inches; strong brown (7.5YR 5/6) very gravelly loam, brown (7.5YR 4/4) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; abundant roots; strongly acid (pH 5.1); clear smooth boundary.

B-3 to 9 inches; reddish yellow (7.5YR 6/6) very gravelly loam, yellowish red (5YR 5/6) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common roots; strongly acid (pH 5.3); gradual smooth boundary.

Bt1-9 to 18 inches; reddish yellow (7.5YR 6/6) gravelly loam, strong brown (7.5YR 5/6) moist; moderate fine subangular blocky structure; hard, firm, sticky and slightly plastic; common roots; medium acid (pH 5.7); gradual smooth boundary.

Bt2-18 to 36 inches; brownish yellow (10YR 6/6) very gravelly loam, strong brown (7.5YR 5/6) moist; weak fine subangular blocky structure; firm, sticky and slightly plastic; common roots; medium acid (pH 6.0); clear wavy boundary.

C-36 to 60+ inches; yellow (10YR 7/6) very gravelly loam, reddish yellow (7.5YR 6/6) moist; massive; friable, slightly sticky and slightly plastic; few roots; slightly acid (pH 6.2).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Lick Creek, 0.7 miles southeast of Red Hill; SE 1/4 SE 1/4 Section 16, T. 15 N., R. 5 E.

Range in Characteristics: The soil is 40 to 60+ inches deep to hard fractured bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 36° to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 9 and 26 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly to strongly acid. Base saturation is greater than 60 percent between 10 and 30 inches.

The A horizon is brown, strong brown, light brown, reddish yellow, or yellowish red (7.5YR 5/4, 5/6, 6/4, 6/6; 5YR 5/6, 6/6). Moist colors are dark brown, strong brown, reddish brown, or yellowish red (7.5YR 4/4, 4/6; 5YR 4/3, 4/4, 4/6). It is very gravelly loam or gravelly loam, with 25 to 45 percent gravel and 5 to 10 percent cobbles. Reaction is medium to slightly acid.

The Bt horizon is light brown, reddish yellow, pink, light reddish brown, or reddish yellow (10YR 6/6; 7.5YR 6/4, 6/6, 6/8, 7/4; 5YR 6/4, 6/6). Moist colors are brown, strong brown, reddish brown, yellowish red or red (7.5YR 4/4, 4/6, 5/4, 5/6; 5YR 5/3, 5/4, 5/6; 2.5YR 4/4, 4/6). It is very gravelly loam, extremely gravelly loam, very gravelly clay loam, or extremely gravelly clay loam. Rock fragments are 35 to 60 percent gravel and 10 to 20 percent cobbles.

Reaction is medium acid to neutral.

The C horizon is light yellowish brown, brownish yellow, yellow, light brown, reddish yellow, pinkish gray, pink or light reddish brown (10YR 6/4, 6/6, 7/6; 7.5YR 6/4, 6/6, 7/2, 7/4, 7/6; 5YR 6/2, 6/3, 6/4). Moist colors are brown strong brown, light brown, reddish yellow, reddish gray, or reddish brown (7.5YR 5/4, 5/6, 6/4, 6/6; 5YR 5/2, 5/3, 5/4). It is very gravelly loam, extremely gravelly loam, very gravelly sandy loam, or extremely gravelly sandy loam. Rock fragments are 35 to 60 percent gravel and 10 to 20 percent cobbles.

Reaction is slightly acid to neutral.

Typically, the lithic contact is hard, fractured peridotite.

Use and Vegetation: Used primarily for watershed and wildlife habitat. Secondary use includes timber production. The native vegetation includes Jeffrey pine, incense cedar, Douglas-fir, California bay, Fremont silktassel, coffeeberry, huckleberry oak and pinemat manzanita.

OLOSEN FAMILY

The Oosen family consists of very deep, somewhat excessively drained soils that formed in volcanic ash deposits. Oosen family soils are on volcanic mountains and flats. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 41°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Ashy, frigid, Dystric Xeropsamments.

Typical Pedon: Oosen family fine sandy loam - on an 8 percent northeast-facing slope at 6,000 feet elevation, under white fir, ponderosa pine, lodgepole pine, snowbrush, greenleaf manzanita and bottlebrush squirreltail. (Colors are for dry soil unless otherwise noted.)

O-1 to 0 inches; fresh and partially decomposed conifer needles and twigs.

A1-0 to 6 inches; light yellowish brown (10YR 6/4) sandy loam, dark grayish brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine and medium roots; few fine and very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

A2-6 to 11 inches; pale brown (10YR 6/3) sandy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common, very fine and few fine medium and coarse roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

C1-11 to 26 inches; pale brown (10YR 6/3) loamy sand, dark brown (10 YR 3/3) moist; weak medium sub-angular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine and medium roots; few very fine interstitial pores; neutral (pH 7.0); gradual smooth boundary.

C2-26 to 40 inches; pale brown (10YR 6/3) loamy sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium and common coarse roots; few very fine tubular and interstitial pores; neutral (pH 7.0), gradual smooth boundary.

C3-40 to 71+ inches; light brownish gray (2.5Y 6/2) loamy sand, very dark grayish brown (2.5Y 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few medium and common coarse roots; few interstitial pores; 3 percent cobbles; neutral (pH 7.0).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 2.5 miles northeast of Whaleback Mountain, 4.5 miles southeast of Deer Mountain Lodge, 3.5 miles south of Deer Mountain, 75 yards northeast of turnout on Deer Mountain road; SE 1/4 NW 1/4 Section 20, T. 43 N., R. 2 W.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. The mean annual soil temperature is 39 to 46° F., mean January soil temperature is 32 to 36° F.; and mean July soil temperature is 47 to 57° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 9 and 33 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, grayish brown, brown, pale brown or light yellowish brown (10YR 4/2, 5/2, 5/3, 6/3, 6/4). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is loamy sand, loamy fine sand, sandy loam or fine sandy loam, with 1 to 13 percent gravel. Reaction is medium acid to neutral.

The C horizon is pale brown, light gray, very pale brown or light brownish gray (10YR 6/3, 7/2, 7/3; 2.5Y 6/2). Moist colors are very dark grayish brown, dark brown, dark grayish brown, brown, dark yellowish brown, or gray (2.5Y 3/2; 10YR 3/2, 3/3, 4/2, 4/3, 4/4, 5/1). It is sandy loam, gravelly sandy loam, fine sandy loam, loamy fine sand, cobbly loamy fine sand, loamy sand, or gravelly to extremely gravelly loamy sand with 1 to 5 percent clay. The 10 to 40 inch control section has a weighted average of less than 35 percent gravel, cobbles, and stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used for timber production and wildlife habitat. Native vegetation includes white fir, ponderosa pine, few lodgepole pine, red fir, juniper, snowbrush, greenleaf manzanita, pinemat manzanita, squaw carpet, rabbitbrush, bitterbrush, blue elderberry, bottlebrush squirreltail, stipa and carex.

OVALL FAMILY

The Ovall family consists of deep, well drained soils formed from granitic parent material. The soils occur on mountain sideslopes. Slopes range from 30 to 50 percent. The mean annual precipitation is 35 to 50 inches and the mean annual temperature is about 52°F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Coarse-loamy, mixed, mesic Typic Xerumbrepts.

Typical Pedon: Ovall family sandy loam - on a 60 percent south-facing slope at 1,450 feet elevation, under a cover of ponderosa pine and madrone. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; undecomposed and slightly decomposed plant material.

A1-0 to 2 inches; brown (10YR 4/3) sandy loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant roots; slightly acid (pH 6.4); clear smooth boundary.

A2-2 to 5 inches; brown (10YR 5/3) sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; common roots; neutral (pH 6.7); clear smooth boundary.

A3-5 to 10 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common roots; slightly acid (pH 6.1); gradual smooth boundary.

Bw-10 to 18 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common roots; slightly acid (pH 6.2); gradual smooth boundary.

C1-18 to 28 inches; light yellowish brown (10YR 6/4) sandy loam, olive brown (2.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few roots; slightly acid (pH 6.4); diffuse boundary.

C2-28 to 43 inches; olive yellow (2.5Y 6/6) sandy loam, olive (5Y 4/3) moist; massive; slightly hard, friable, slightly sticky, and nonplastic; very few roots; slightly acid (pH 5.1); gradual wavy boundary.

Cr-43+ inches; soft weathered granitic rock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; Seiad Valley, SW 1/4 NW 1/4 Section 12, T. 46 N., R. 12 W.

Range in Characteristics: The soil is 40 to 60 inches deep to soft weathered granitic rock. The mean annual soil temperature is 47 to 59°F.; the mean January soil temperature is 36 to 45°F.; the mean July soil temperature is 55 to 70°F. The soil temperature exceeds 41°F. from February 20 to December 1, and is greater than 47°F. from March 20 to November 15. The soil between the depths of 10 and 30 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, brown, or grayish brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are black, very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/1, 2/2, 3/1, 3/2, 3/3). It is loam, sandy loam, or coarse sandy loam, with less than 15 percent coarse fragments. Reaction is slightly acid to neutral.

The Bw horizon is brown, yellowish brown, pale brown or light yellowish brown (7.5YR 5/2, 5/4; 10YR 5/3, 5/4, 6/3, 6/4). Moist colors are dark brown, dark yellowish brown, or light olive brown (7.5YR 3/2, 3/4; 10YR 4/3, 4/4; 2.5Y 5/4). It is loam or sandy loam, with less than 15 percent coarse fragments. Reaction is slightly acid.

The C horizon is yellowish brown, light yellowish brown, or olive yellow (10YR 5/4, 6/4; 2.5Y 6/4, 6/6). Moist colors are dark grayish brown, olive brown, olive gray, or olive (2.5Y 4/2, 4/4; 5Y 4/2, 4/3). It is sandy loam or loamy sand, with less than 15 percent coarse fragments. Reaction is strongly to slightly acid.

Use and Vegetation: Used for watershed, range, wildlife habitat and timber production. The native vegetation includes ponderosa pine, Douglas-fir, white fir, madrone, black oak, chinquapin, greenleaf manzanita and incense cedar.

PARKS FAMILY

The Parks family consists of moderately deep, well drained soils formed from ultramafic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 70 to 100 inches and the mean annual temperature is about 41°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, frigid Typic Xerochrepts.

Typical Pedon: Parks family gravelly fine sandy loam - on a 60 percent southwest facing-slope at 5,500 feet elevation, under a montane-shrub cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; weakly matted conifer and shrub leaves.

A1-0 to 2 inches; yellowish red (5YR 4/6) gravelly fine sandy loam, reddish brown (5YR 4/4) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant roots; neutral (pH 6.6); clear smooth boundary.

AB-2 to 7 inches; red (2.5YR 4/6) gravelly fine sandy loam, reddish brown (2.5YR 4/4) moist; moderate very fine and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; abundant roots; neutral (pH 6.7); gradual smooth boundary.

Bw-7 to 15 inches; yellowish red (5YR 5/6) gravelly fine sandy loam, yellowish red (5YR 5/6) moist; weak moderate and coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common roots; neutral (pH 6.8); diffuse boundary.

BC-15 to 33 inches; strong brown (7.5YR 5/8) very gravelly loamy fine sand, strong brown (7.5YR 5/7) moist; massive; soft, very friable, nonsticky, nonplastic; few roots; neutral (pH 6.8); clear smooth boundary.

C-33 to 37 inches; strong brown (7.5YR 5/8) very gravelly fine sandy loam, strong brown (7.5YR 5/8) moist; massive; few roots; neutral (pH 6.8); abrupt irregular boundary.

R-37+ inches; hard bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; 1.3 miles NE of Red Butte; SW 1/4 SW 1/4 Section 8, T. 47 N., 4. 11 W.

Range in Characteristics: The soil is 20 to 40 inches deep to fractured bedrock. The mean annual soil temperature is about 35 to 46° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 43 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20, and is greater than 47° F. from May 15 to October 20. The soil between the depths of 12 and 35 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly acid to neutral.

The A horizon is reddish brown, red, or yellowish red (2.5YR 4/4, 5/4, 4/6; 5YR 5/3, 5/4, 4/6). Moist colors are dark reddish brown, reddish brown, or yellowish red (2.5YR 3/4, 4/4, 4/6; 5YR 4/3, 4/4, 4/6, 3/4). It is gravelly loam, gravelly sandy loam, or gravelly fine sandy loam, with 20 to 40 percent gravels and 5 to 20 percent cobbles. Reaction is slightly acid to neutral.

The B horizon is reddish brown, yellowish red, brown, or strong brown, both dry and moist (5YR 4/3, 5/3, 5/4, 5/6, 5/8; 7.5YR 5/4, 5/6, 5/7, 5/8). It is very gravelly or gravelly loam, very gravelly or gravelly fine sandy loam, or very gravelly or gravelly loamy fine sand. There are 25 to 50 percent gravels and 5 to 20 percent cobbles. The family control section has a weighted average of greater than 35 percent coarse fragments. Reaction is slightly acid to neutral.

The C horizon is strong brown, reddish yellow, or brownish yellow (7.5YR 5/6, 5/8, 6/6, 6/8; 10YR 6/6, 6/8). Moist colors are strong brown and yellowish brown (7.5YR 4/6, 5/6, 5/8; 10YR 5/4, 5/6, 5/8). It is gravelly or very gravelly loam or gravelly or very gravelly fine sandy loam, with 35 to 60 percent gravel and 20 to 60 percent cobbles. Reaction is neutral.

Use and Vegetation: Used for timber, watershed, and wildlife habitat. The native vegetation includes Jeffrey pine, incense cedar, western white pine, white fir, red fir, huckleberry oak, pinemat manzanita, currant and beargrass.

PRATHER FAMILY

The Prather family consists of very deep well drained soils formed from metamorphic rocks. Prather family soils occur on mountain sidelopes and landslide deposits. Slopes range from 30 to 50 percent. The mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 52°F. Elevations are 1,000 to 4,500 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey, kaolinitic, mesic, Xeric Haplohumults.

Typical Pedon: Prather family loam - on a 30 percent convex northeast-facing slope at 2,100 feet elevation, under mixed conifers, hardwood, shrubs and forbs. (Colors are for dry soil unless otherwise stated).

0-2 to 0 inches; loose and weakly matted fresh broad leaves and needles.

A1-0 to 1 inch; reddish brown (5YR 4/4) loam, reddish brown (5YR 4/3) moist; strong very fine granular structure; soft, very friable, slightly sticky and non-plastic; many roots; slightly acid (pH 6.1); abrupt smooth boundary.

A2-1 to 4 inches; yellowish red (5YR 5/6) loam, dark reddish brown (2.5YR 3/4) moist; moderate fine granular structure; slightly hard, friable, sticky and slightly plastic; few thin clay films on ped faces; common roots; slightly acid (pH 6.2); clear smooth boundary.

B-4 to 9 inches; red (2.5YR 5/6) clay loam, dark red (2.5YR 3/6) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common thin clay films on ped faces; common roots; slightly acid (pH 6.4); gradual smooth boundary.

Bt1-9 to 22 inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/6) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; many moderately thick clay films on ped faces; few roots; medium acid (pH 6.0); gradual smooth boundary.

Bt2-22 to 35 inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/6) moist; weak fine and medium angular

blocky structure; slightly hard, friable, sticky and plastic; continuous moderately thick clay films on ped faces; very few roots; medium acid (pH 5.8); diffuse boundary.

Bt3-35 to 55 inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/6) moist; weak coarse angular blocky structure; slightly hard, friable, sticky and plastic; continuous moderately thick clay films on ped faces; very few roots; medium acid (pH 5.8); diffuse boundary.

BC-55 to 79+ inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/8) moist; massive; slightly hard, friable, sticky and plastic; medium acid (pH 5.9).

Type Location: Ukonom District, Klamath National Forest; Siskiyou County, California, SW 1/4 SW 1/4 Section 32, T. 12 N., R. 6 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. The mean annual soil temperature is 48 to 59°F.; the mean January soil temperature is 36 to 45°F.; the mean July soil temperature is 60 to 78°F. The soil temperature exceeds 41°F. from February 15 to December 10, and exceeds 47°F. from March 10 to November 15. The soil between the depths of 6 to 18 inches is dry in all parts from July 10 to October 20 in most years and moist in some or all parts the rest of the year.

The A horizon is reddish brown or yellowish red (5YR 4/4, 5/6). Moist colors are reddish brown or dark reddish brown (5YR 4/3; 2.5YR 3/4). It is a loam. Reaction is slightly acid.

The B horizon is red (2.5YR 5/6, 5/8). Moist colors are dark red or red (2.5YR 3/6, 4/6, 4/8). It is clay loam or silty clay loam. Reaction is medium to slightly acid.

Use and Vegetation: Used for timber production, wildlife habitat and range. Native vegetation is mostly Douglas-fir, sugar pine, tanoak, madrone and mountain dogwood with an understory of western blueberry, salal, creeping snowberry, chinquapin, Oregon grape, longleaf mahonia, rose, poison oak, bracken fern and princes pine.

QUAM FAMILY

The Quam family consists of deep and very deep somewhat poorly, poorly or very poorly drained soils that formed in alluvium from extrusive igneous rock and volcanic ash sources. They occupy basin, basin terrace, low terrace and fan positions. Slopes range from 0 to 5 percent. The mean annual precipitation is 20 to 30 inches and the mean annual air temperature is about 43°F. Elevations are 4,500 to 5,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-silty, mixed, frigid, Cumulic Haplaquolls.

Typical Pedon: Quam family loam - on a 2 percent sloping flat at 4,560 feet elevation, under a cover of sedges, rushes and other meadow vegetation. (Colors are for dry soil unless otherwise noted.)

A1-0 to 1 inch; gray (10YR 5/1) loam, black (10YR 2/1) moist, moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; medium acid (pH 6.0); abrupt smooth boundary.

A2-1 to 5 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; few very fine interstitial pores; medium acid (pH 6.0); clear smooth boundary.

A3-5 to 21 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; distinct mottling begins to occur; moderate medium and coarse subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine roots; few fine interstitial pores; slightly acid (pH 6.5); clear

smooth boundary.

C-21 to 60+ inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; distinct and prominent mottling; moderate medium subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine roots; common very fine interstitial and tubular pores; neutral (pH 7.0).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; Bray Quadrangle; SW 1/4 SW 1/4 SE 1/4 Section 17, T. 44 N., R. 1 E.

Range in Characteristics: Quam family soils are 40 to 60+ inches deep that formed in alluvium. The mean annual soil temperature is 38 to 46° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 43 to 55° F. The soil temperature at a depth of 20 inches exceeds 41° F. from May 1 to November 10 and exceeds 47° F. from June 10 to October 20. The soils are moist between the depths of 4 and 12 inches, except during the period of August 1 to October 1.

The A horizons are gray, grayish brown or dark gray (10YR 4/1, 5/1, 5/2) dry, black or very dark brown (10YR 2/1, 2/2) moist. It is loam or silt loam. Coarse fragments are 0 to 5 percent. Reaction is medium acid.

The C horizon is strongly gleyed. It is light brownish gray (10YR 6/2) dry, very dark grayish brown (10YR 3/2) moist. It is silt loam or silty clay loam. Reaction is neutral.

Use and Vegetation: Used mainly for grazing during summer months. The natural vegetation is sedges, rushes and various water loving grasses.

REDCAP FAMILY

The Redcap family consists of deep or very deep, somewhat excessively to excessively drained soils that formed in material weathered from igneous rocks overlain by moderately thick layers of young pyroclastic materials. These soils are on volcanic uplands. Slopes range from 2 to 30 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40°F. Elevations are 5,400 to 6,700 feet. The climate is moderate summer mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Cindery over medial-skeletal, frigid Dystric Xerorthents.

Typical Pedon: Redcap family very gravelly coarse sand - on a 5 percent concave north-facing slope at 6,400 feet elevation, under lodgepole pine, red fir, pinemat manzanita and sedges. (Colors are for dry soil unless otherwise stated.)

O-2 to 0 inches; fresh and partially decomposed conifer needles and twigs.

A1-0 to 2 inches; grayish brown (10YR 5/2) gravelly coarse sand, very dark brown (10YR 2/2) moist; single grained; loose, loose, nonsticky and nonplastic; common very fine roots; common very fine and few fine interstitial pores; 25 percent fine and medium pumice pebbles; medium acid (pH 6.0); clear wavy boundary.

C-2 to 22 inches; stratified layers of ash and pumice; light gray to white (10YR 6/1, 7/1, 7/2, 8/1, 8/2) gravelly to very gravelly coarse sand to loamy sand, black to pale brown (10YR 2/1 to 6/3) moist; massive to single grained; loose to soft, loose to very friable, nonsticky, and nonplastic; 15 to 55 percent pumice pebbles; slightly acid (pH 6.5); abrupt wavy boundary.

2Ab-22 to 36 inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, medium, and coarse and common fine roots; few very fine interstitial pores; 15 percent pebbles; 40 percent cobbles, and 20 percent stones; slightly acid (pH 6.5); gradual wavy boundary.

2Bt1b-36 to 48 inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; very few thin clay bridging; few very fine, fine,

medium and coarse roots; few very fine interstitial and tubular pores; 25 percent pebbles; 40 percent cobbles, and 10 percent stones; slightly acid (pH 6.5); gradual wavy boundary.

2Bt2b-48 to 55 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, nonsticky and nonplastic; few thin clay films in pores and in ped faces; few very fine, fine, and medium roots; few fine tubular pores; 30 percent pebbles, 10 percent cobbles and 5 percent stones; slightly acid (pH 6.5); abrupt smooth boundary.

R-55+ inches; fractured, mixed igneous rocks.

Type Location: Goosenest Ranger District, Klamath National Forest; Siskiyou County, California; 2 1/2 miles north of Little Mt. Hoffman; about 3 miles northwest of Medicine Lake Glass Flow; SE 1/4 NE 1/4 Section 31, T. 44 N., R. 3 E.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 39 to 44° F.; mean January soil temperature is 30 to 35° F.; and mean July soil temperature is 43 to 54° F. The soil temperature exceeds 41° F. from April 25 to November 20 and exceeds 47° F. from June 1 to October 20. The soil between a depth of 15 to 40 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, grayish brown, or brown (10YR 4/2, 5/2, 5/3). Moist colors are very dark brown, very dark grayish brown, or dark brown (10YR 2/2, 3/2, 3/3). It is gravelly to extremely gravelly coarse sand with 0.5 to 8 percent clay and 15 to 90 percent pumice gravel. Reaction is strongly to slightly acid.

The C horizon is composed of stratified layers of ash and pumice. It is light gray to white (10YR 6/1, 7/1, 7/2, 8/1, 8/2). Moist colors are black to pale brown (10YR 2/1, 3/1, 3/2, 4/3, 5/2, 5/3, 6/2, 6/3). It is gravelly to very gravelly coarse sand or gravelly to very gravelly loamy coarse sand with 0.5 to 8 percent clay and 15 to 55 percent pumice gravel (the weighted average is greater than 35 percent). Reaction is strongly to slightly acid.

The 2Ab horizon is brown or yellowish brown (10YR 5/3, 5/4). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 4/4). It is sandy loam, gravelly sandy loam, or very cobbly to extremely cobbly sandy loam

with 10 to 20 percent clay and 12 to 75 percent gravel, cobbles and stones. Reaction is medium acid to neutral.

The 2Btb horizon is yellowish brown or pale brown (10YR 5/4, 6/3). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 3/4, 4/4). It is gravelly to very gravelly sandy loam or very cobbly to extremely cobbly sandy loam with 12 to 16 percent clay and 20

to 75 percent gravel, cobbles, and stones (but weighted average of control section has greater than 35 percent coarse fragments). Reaction is slightly acid to neutral.

Use and vegetation: Used mainly for timber production and wildlife habitat. Native vegetation is lodgepole pine, white fir, red fir, pinemat manzanita, greenleaf manzanita, snowbrush, sedges and few perennial grasses.

RIVERWASH

Riverwash consists of unconsolidated and stratified sandy, silty, clayey, stony, cobbly and gravelly sediment that is reworked annually. It supports little or no vegetation. Slope is 0 to 2 percent. Drainage is excessive. Areas

of riverwash are subject to deposition when flooding occurs. Riverwash is used primarily for wildlife habitat and watershed. A few areas are mined for sand, gravel and precious metals (gold and platinum).

ROCK OUTCROP

Rock outcrop consists of exposed bare bedrock. It supports a few forbs and occasionally a stunted tree.

Due to the very rapid runoff from the bare rock, the erosion hazard on the adjacent areas is very high.

ROGUE FAMILY

The Rogue family consists of moderately deep to deep, well drained soils formed in residuum from granitic rocks. These soils occur on mountain sideslopes and ridges. Slopes range from 30 to 50 percent. The mean annual precipitation is 50 to 60 inches and the mean annual temperature is about 45°F. Elevations are 4,800 to 6,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Coarse-loamy, mixed, frigid Dystric Xerochrepts.

Typical Pedon: Rogue family loamy sand - on a 50 percent northwest-facing slope at 4,800 feet elevation, under a mixed conifer and shrub cover. (Colors are for dry soil unless otherwise stated).

O-2 to 0 inches; matted, fresh and partially decomposed needles and twigs.

A1-0 to 2 inches; light olive brown (2.5Y 5/4) loamy sand, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 10 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt1-2 to 11 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; common very fine and fine interstitial and tubular pores; very few thin clay films as bridges; 10 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt2-11 to 29 inches; very pale brown (10YR 7/4) sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; common thin clay films on ped faces and as bridges; 12 percent pebbles; neutral

(pH 7.0); gradual smooth boundary.

Cr-29+ inches; soft, highly weathered granitic rock.

Type Location: Salmon River District, Klamath National Forest; Siskiyou County, California; 0.5 miles southwest of Bowerman Peak; SE 1/4 NW 1/4 Section 11, T, 9 N., R. 11 W.

Range in Characteristics: The soil is 20 to 60 inches deep to soft weathered bedrock. The mean annual soil temperature is 40 to 46° F.; the mean January temperature is 30 to 36° F.; the mean July temperature is 44 to 55° F. The soil temperature exceeds 41° F. from April 10 to November 10, and is greater than 47° F. from May 10 to October 20. The soil between the depths of 14 and 41 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is medium acid to neutral.

The A horizon is light olive brown, grayish brown, brown or light brownish gray, light brownish gray (2.5Y 5/4; 10YR 5/2, 5/3, 6/2). Moist colors are very dark brown, dark brown or dark grayish brown (10YR 3/2, 3/3, 3/4). It is loam, sandy loam or loamy sand, with 2 to 15 percent gravel. When mollic colors occur the epipedon is too thin to be a mollic epipedon. Reaction is medium acid to neutral.

The Bt horizon is yellowish brown, pale brown or very pale brown (10YR 5/4, 6/3, 7/4). Moist colors are dark yellowish brown, brown, dark brown or brownish yellow (10YR 3/4, 4/3, 5/4). It is loamy sand or sandy loam, with 5 to 12 percent gravel. Reaction is slightly acid to neutral.

The Cr horizon is soft, moderately fractured granitic rock.

Use and Vegetation: Used for commercial timber production, watershed and wildlife habitat. Native vegetation is white fir, Douglas-fir, incense cedar greenleaf manzanita, madrone, deerbrush and squaw carpet.

RUCLICK FAMILY

The Ruclick family consists of moderately deep, well drained soils that formed in materials weathered from andesitic and basaltic rock. Ruclick soils are on mountain sideslopes and lava flows on volcanic uplands. Slopes range from 0 to 30 percent. The mean annual precipitation is 9 to 12 inches and the mean annual temperature is about 41°F. Elevations are 4,200 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, montmorillonitic, mesic, Aridic Argixerolls.

Typical Pedon: Ruclick family sandy loam - on a 12 percent southeast-facing slope at 4,600 feet elevation, under ponderosa pine, juniper, big sagebrush, rabbitbrush, bitterbrush, stipa, bottlebrush squirreltail and Idaho fescue. (Colors are for dry soil unless otherwise stated).

A1-0 to 2 inches; brown (10YR 5/3) sandy loam, dark brown (7.5YR 3/2) moist; moderate coarse platy structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine interstitial pores; 3 percent pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

A2-2 to 5 inches; grayish brown (10YR 5/2) sandy loam, dark brown (7.5YR 3/2) moist; moderate very fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 13 inches; grayish brown (10YR 5/2) stony sandy clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few thin clay films on ped faces and in pores; common very fine and few fine roots; few very fine and fine tubular pores; 10 percent cobbles and 15 percent stones; neutral (pH 7.0); clear smooth boundary.

Bt2-13 to 34 inches; brown (7.5YR 4/4) very stony clay, dark brown (7.5YR 3/4) moist; moderate medium and strong fine angular blocky structure; extremely hard, firm, very sticky and very plastic; many moderately thick and thin clay films on ped faces and in pores; few very fine and fine roots; few very fine tubular pores; 10 percent cobbles and

40 percent stones; neutral (pH 7.0); abrupt smooth boundary.

R-34+ inches; hard, slightly fractured basaltic rock.

Type Location: Gooseneck District, Klamath National Forest; Siskiyou County, California; 1 2/3 miles southeast of Cedar Mountain, 7.5 miles northeast of Tennant, 1 mile northeast of Antelope Sink, about 25 yards north of dirt road; NW 1/4 NE 1/4 Section 5, T. 44 N., R. 1 E.

Range in Characteristics: Depth to a lithic contact is 20 to 40 inches. Mean annual soil temperature is 45 to 60°F.; mean January soil temperature is 32 to 47°F.; and mean July soil temperature is 54 to 72°F. The soil temperature exceeds 41°F. from April 1 to November 25 and exceeds 47°F. from May 1 to November 1. The soil between a depth of 8 and 20 inches is dry in all parts from June 10 to October 15. The mollic epipedon is 10 to 17 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches and greater than 50 percent below.

The A horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2; 7.5YR 3/2). It is loam or sandy loam with 8 to 20 percent clay and 0 to 5 percent gravel. Reaction is strongly acid to neutral.

The Bt horizon is dark brown, grayish brown, brown or yellowish brown (7.5YR 4/4; 10YR 4/3, 5/2, 5/3, 5/4). Moist colors are very dark grayish brown, dark yellowish brown, or dark brown (10YR 3/2, 3/4, 3/3; 7.5YR 3/2, 3/4). It is sandy loam, very cobbly to extremely cobbly clay loam, extremely stony clay loam, stony sandy clay loam, extremely cobbly clay or very stony clay with 18 to 45 percent clay and 5 to 80 percent gravel, cobbles and stones. The weighted average of the family control section is greater than 35 percent clay and greater than 35 percent gravel, cobbles and stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes ponderosa pine, mountain mahogany, juniper, big sagebrush, rabbitbrush, bitterbrush, stipa, bottlebrush squirreltail and Idaho fescue.

SHELD FAMILY

The Sheld family consists of moderately deep and deep, well drained soils formed from volcanic ash deposits over material weathered from tuff, tuff breccia or extrusive igneous rock. These soils are on mountain sideslopes and volcanic uplands. Slopes range from 15 to 70 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is about 41°F. Elevations are 5,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Medial-skeletal, frigid Andic Xerumbrepts.

Typical Pedon: Sheld family sandy loam - on an 18 percent west-facing slope at 6,200 feet elevation, under a cover of white fir, red fir and lodgepole pine. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; matted, fresh and partially decomposed conifer needles and twigs.

A1-0 to 2 inches; brown (10YR 4/3) sandy loam, dark reddish brown (5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; 10 percent pebbles; few very fine and fine roots; common very fine, fine, and medium interstitial pores; strongly acid (pH 5.5); clear smooth boundary.

A2-2 to 11 inches; brown (10YR 4/3) fine sandy loam, dark reddish brown (5YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 12 percent pebbles; 5 percent cobbles, and 15 percent stones; few very fine and coarse, and common fine and medium roots; few very fine and fine tubular pores; medium acid (pH 6.0); clear wavy boundary.

Bw1-11 to 21 inches; reddish brown (5YR 5/3) very stony fine sandy loam, dark reddish brown (5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 12 percent pebbles, 15 percent cobbles, and 30 percent stones; few very fine and fine, and common medium and coarse roots; few very fine tubular pores; slightly acid (pH 6.5); gradual wavy boundary.

Bw2-21 to 34 inches; reddish brown (5YR 5/3) very cobbly fine sandy loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 20 percent pebbles; 20 percent cobbles, and 5 percent stones; few very fine, fine, and coarse,

and common medium roots; few very fine tubular and interstitial pores; slightly acid (pH 6.5); clear irregular boundary.

Cr-34 to 48+ inches; weathered andesite.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; NW 1/4 NE 1/4 Section 15, T. 46 N., R. 3 W.

Range in Characteristics: The volcanic ash mantle is 20 to 40 inches thick. Depth to a paralithic contact of weathered basalt is 20 to 60 inches. The mean annual soil temperature is 42 to 47°F. The soil temperature exceeds 41°F. from May 1 to November 10 and exceeds 47°F. from June 1 to October 20. The soil is dry in the 8 to 24 inch control section from mid-July to mid-October and is moist in some or all parts the rest of the year. Base saturation is assumed to be less than 50 percent in the epipedon as indicated by adjacent lab data.

The A horizon is reddish brown, brown, dark yellowish brown, yellowish brown, or grayish brown (5YR 5/3; 7.5YR 4/4, 5/4; 10YR 4/2, 4/3, 4/4, 5/2, 5/3, 5/4). Moist colors are dark reddish brown, black, very dark brown, very dark grayish brown, or dark brown (5YR 3/2, 3/3; 10YR 2/1, 2/2, 3/2, 3/3). It is a loam, sandy loam, fine sandy loam or loamy sand and may be gravelly, very gravelly, cobbly or very cobbly. There are 5 to 30 percent gravels, 5 to 20 percent cobbles, and 0 to 15 percent stones present. Reaction is strongly acid to neutral.

The Bw horizon is weak red, reddish brown, brown, yellowish red, or pale brown (2.5 YR 5/2, 5/4; 5YR 5/3, 5/4; 7.5YR 5/2, 5/4; 10YR 5/3, 5/4, 6/3). Moist colors are dusky red, dark reddish brown, dark brown, very dark grayish brown, or dark yellowish brown (2.5YR 3/2, 3/4; 5YR 3/3, 3/4; 7.5YR 3/2, 3/4, 4/4; 10YR 3/2, 3/3, 3/4, 4/3, 4/4). It is fine sandy loam or loamy sand and is either gravelly, very gravelly, very cobbly or very stony. There are 20 to 55 percent gravels, 10 to 35 percent cobbles and 5 to 30 percent stones present. Reaction is medium acid to mildly alkaline.

The C horizon, if present, is pinkish gray or pale brown (7.5 YR 6/2; 10YR 6/3). Moist colors are reddish brown or dark brown (5YR 4/3; 7.5YR 4/2; 10YR 3/3, 4/3). It is a very cobbly loam, very cobbly sandy loam or very cobbly loamy sand. There are 10 to 20 percent gravels, 35 to 50 percent cobbles and 0 to 10 percent stones present. Reaction is neutral.

Use and Vegetation: Used mainly for timber. Native vegetation is mainly white fir, with red fir, ponderosa pine, Douglas-fir, incense cedar, snowbrush, wild currant, mountain mahogany, chinquapin, squaw carpet,

manzanita, dryland sedge, threadleaf sedge and bottlebrush squirreltail.

SKALAN FAMILY

The Skalan family consists of moderately deep, deep or very deep, well drained soils that formed in residuum and landslide material from metamorphic and mafic plutonic rocks. They occur on mountain sideslopes and landslide deposits. Slopes range from 15 to 70 percent. The mean annual precipitation is 25 to 65 inches and the mean annual temperature is about 50°F. Elevations are 1,500 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Ultic Haploxeralfs.

Typical Pedon: Skalan family very gravelly loam - on a 70 percent north-facing slope at 1,600 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise noted).

O-1/2 to 0 inch; loose broad leaves and conifer needles.

A-0 to 1 inch; brown (7.5YR 5/4) very gravelly loam, dark reddish brown (5YR 3/4) moist; strong very fine crumb structure; soft, very friable, slightly sticky and nonplastic; medium acid (pH 6.0); abrupt smooth boundary.

AB-1 to 5 inches; light brown (7.5YR 6/4) very gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; strongly acid (pH 5.5); clear smooth boundary.

Bt1-5 to 11 inches; light reddish brown (5YR 6/4) very gravelly loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, sticky and slightly plastic; common thin clay films on pedfaces; common fine roots; slightly acid (pH 6.1); clear smooth boundary.

Bt2-11 to 18 inches; light reddish brown (5YR 6/4) very gravelly clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; many thin clay films on ped faces; common fine and medium roots; medium acid (pH 6.0); gradual smooth boundary.

Bt3-18 to 26 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; hard, friable, sticky and slightly plastic; common moderately thick clay films on ped faces; common medium roots; medium acid (pH 6.0); gradual smooth boundary.

C-26 to 32 inches; light yellowish brown (10YR 6/4) very

gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly sticky and slightly plastic; medium acid (pH 5.9); abrupt irregular boundary.

R-32+ inches; fractured, weathered gabbro bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; along Clear Creek about 7 miles upstream from its confluence with the Klamath River; SE 1/4 Section 32, T. 16 N., R. 6 E., Humboldt Base Meridian.

Range in Characteristics: Skalan family soils are 20 to 60+ inches deep. The mean annual soil temperature is 47 to 59° F. The mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature at a depth of 20 inches exceeds 41° F. from February 20 through mid-December and exceeds 47° F. from mid-March through November 15. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year. In the upper 30 inches base saturation is less than 75 percent in some part.

The A horizons are reddish brown, brown, light brown, very dark grayish brown, dark brown, dark grayish brown, grayish brown, yellowish brown, pale brown, and light yellowish brown (5YR 4/4; 7.5YR 4/2, 4/4, 5/4, 6/4; 10YR 3/2, 3/3, 4/2, 4/3, 5/2, 5/3, 5/4, 5/6, 6/3, 6/4). The moist colors are dusky red, dark reddish brown, dark brown, brown, very dark gray, very dark grayish brown, and dark yellowish brown (2.5YR 4/4; 5YR 3/3, 3/4; 7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 2/1, 3/1, 3/2, 3/3, 3/4, 4/3.). Textures are either loam or sandy loam, and may be gravelly or very gravelly, with 15 to 80 percent gravel and less than 10 percent cobbles. Reaction is medium acid to neutral.

The Bt horizons are yellowish red, light brown, brown, reddish yellow, light yellowish brown, pale brown, light brownish gray, brownish yellow, and very pale brown (5YR 5/8, 6/4, 6/6; 7.5 YR 5/4, 6/4, 6/6; 10YR 5/3, 5/4, 6/2, 6/3, 6/4, 6/6, 7/4; 2.5Y 6/2, 6/4). The moist colors are dark red, red, reddish brown, brown, dark brown, strong brown, dark yellowish brown, dark grayish brown, olive brown, or light olive brown (2.5YR 3/6, 4/6; 5YR 4/4, 4/5; 7.5YR 4/4, 4/6, 5/4; 10YR 4/3, 4/4, 5/4, 5/6; 2.5Y 4/2, 4/4, 5/4). Textures are gravelly or very gravelly, and are sandy loam, loam, clay loam, or sandy clay loam. There are 25 to 70 percent gravels, with a weighted average of 35 percent. Cobbles and stones, if present, are between 5 and 25 percent. Reaction is medium acid to neutral.

The C horizon is brown, strong brown, light brown, reddish yellow, yellowish brown, pale brown, light yellowish brown, brownish yellow, light brownish gray, and pale yellow (7.5YR 5/4, 5/6, 5/8, 6/4, 6/6; 10YR 5/3, 5/4, 6/3, 6/4, 6/6; 2.5Y 6/2, 6/4, 7/4). Moist colors are brown, strong brown, yellowish brown, light olive brown, and light yellowish brown (7.5YR 4/4, 4/6, 5/4, 5/6; 10YR 4/3, 5/3, 5/4, 5/6; 2.5Y 5/4, 6/4). Textures are very gravelly to extremely gravelly loamy sand, sandy loam, loam, clay loam, or sandy clay loam. There are 35 to 80 percent gravel and 5 to 25 percent cobbles and stones. Reaction is medium acid to neutral.

Use and Vegetation: Used primarily for timber production, wildlife, and watershed. The native vegetation is Douglas-fir, ponderosa pine, white fir, tanoak, incense cedar, sugar pine, black oak, madrone, white oak, canyon live oak, big leaf maple, deerbrush, whiteleaf manzanita, pinemat manzanita, snowberry, vetch, Idaho fescue, stipa, bottlebrush squirreltail, bracken fern, bush chinquapin, mountain mahogany, Oregon grape, twin-flower, buckbrush, modesty flower, greenleaf manzanita, sword fern, poison oak, thimbleberry, yerba santa and berberis.

SMARTS FAMILY

The Smarts family consists of deep or very deep, well drained soils that formed in material weathered from tuff, basalt or andesite. Smarts family soils are on volcanic mountain sideslopes and upland lava flows. Slopes range from 30 to 50 percent. The mean annual precipitation is 20 to 40 inches and the mean annual air temperature is about 42° F. Elevations are 4,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Pachic Ultic Argixerolls.

Typical Pedon: Smarts family loam - on a 30 percent west-facing slope at 4,600 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; matted conifer needles and twigs.

A-0 to 2 inches; dark yellowish brown (10YR 4/4) loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; medium acid (pH 6.0); abrupt smooth boundary.

Bt1-2 to 7 inches; brown (7.5YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few thin clay films on ped faces and in pores; common very fine roots; few very fine tubular pores; 30 percent cobbles and 10 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt2-7 to 15 inches; brown (7.5YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common thin clay films on ped faces and in pores; common fine and medium roots; common very fine tubular pores, 30 percent cobbles and 15 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt3-15 to 44 inches plus; brown (7.5YR 4/4) very cobbly clay loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky struc-

ture; hard, friable, sticky and plastic; few thin clay films on ped faces and in pores; few fine roots; few very fine tubular pores; 30 percent cobbles and 15 percent pebbles; neutral (pH 7.0).

R-44+ inches; hard, moderately fractured basalt.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 5 miles northwest of Lodgepole Guard Station, 1 mile east of Bogus Creek, in Flat Springs Canyon on a 90 degree northeast turn in Bogus dirt road; SW 1/4 NE 1/2 Section 28, T. 47 N., R.4 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 39 to 46° F.; mean January soil temperature is 32 to 36° F.; mean July temperature is 47 to 57° F. The soil temperature exceeds 41° F. from May 15 to October 25 and exceeds 47°F. from June 15 to October 1. The soil between a depth of 6 and 16 inches is dry in all parts from August 1 to October 15. The mollic epipedon is greater than 20 inches thick. The base saturation is between 50 and 75 percent in the upper 30 inches of soil and greater than 50 percent below.

The A horizon is grayish brown, brown or dark yellowish brown (10YR 4/4, 5/2, 5/3). Moist colors are dark brown, very dark grayish brown or very dark brown (10YR 2/2, 3/2, 3/3). It is loam with 12 to 20 percent clay and 0 to 15 percent coarse fragments. Reaction is medium to slightly acid.

The Bt horizon is brown or dark brown (7.5YR 4/4, 5/4). Moist colors are dark brown or dark reddish brown (7.5YR 3/2, 3/4; 5YR 3/3). It is gravelly to extremely gravelly loam or cobbly to very cobbly clay loam with 24 to 34 percent clay and 35 to 90 percent rock fragments. The weighted average of coarse fragments in the family control section is greater than 35 percent. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used mainly for timber and wildlife habitat. Native vegetation includes ponderosa pine, Douglas-fir, incense cedar, white fir, red fir, snow-berry, deerbrush, lupine, squaw carpet, forbs, bottle-brush squirreltail, Idaho fescue and other grasses.

STONEWELL FAMILY

The Stonewell family consists of very deep, excessively drained soils forming in recent pyroclastic materials. These soils are on volcanic uplands. Slopes range from 2 to 9 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40° F. Elevations are 5,400 to 6,700 feet. The climate is moderate summer mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Cindery, frigid, Dystric Xerorthents.

Typical Pedon: Stonewell family very gravelly loamy coarse sand - on a 5 percent south-facing slope at 5,900 feet elevation, under lodgepole pine and currant. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches, fresh and partially decomposed pine needles and twigs.

A-0 to 4 inches; light grayish brown (10YR 6/2) very gravelly loamy coarse sand, dark grayish brown (10YR 4/2) moist; single grained; loose, loose, nonsticky and nonplastic; common very fine, fine, medium and coarse roots; many fine, medium and coarse pores; 40 percent pumice pebbles; strongly acid (pH 5.5); clear smooth boundary.

C1-4 to 15 inches; light gray (10YR 7/2) very gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grained; loose, loose, nonsticky and nonplastic; common fine and few medium roots; many fine, medium and coarse pores; 50 percent pumice pebbles; medium acid (pH 6.0); gradual wavy boundary.

C2-15 to 36 inches; light gray (10YR 7/2) extremely gravelly loamy coarse sand, grayish brown (10 YR 5/2) moist; single grained; loose, loose, nonsticky and non-plastic; few fine roots; many fine, medium and coarse pores; 80 percent pumice pebbles; slightly acid (pH 6.5); gradual wavy boundary.

C3-36 to 60 inches; light gray (10YR 7/2) extremely gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grained; loose, loose, nonsticky and nonplastic; few fine roots; many few, medium and coarse pores; 60 percent pumice pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

2C4-60+ inches; black; slightly cemented layer of cinders.

Note: Between, and within, most of the C horizons are numerous thin dark bands or layers (1/4 to 1 1/2 inches thick). These are high in pumice gravels and appear to be thin buried A horizons or thin dark ash layers.

Type Location: McCloud District, Shasta-Trinity National Forest; Siskiyou County, California; about 1 mile south of Pumicestone Well, 1 mile southwest of Little Glass Mountain and 1/2 mile north east of Paint Pot Crater; in road cut at a culvert passing under the road; SE 1/4 NE 1/4 Section 23, T. 43 N., R. 2 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. Mean annual soil temperature is 39 to 44° F.; mean January soil temperature is 32 to 35° F.; and mean July soil temperature is 47 to 54° F. The soil temperature exceeds 41° F. from April 25 to November 20 and exceeds 47° F. from June 1 to October 20. The soil between a depth of 18 to 53 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is grayish brown, brown or light brownish gray (10YR 5/2, 5/3, 6/2). Moist colors are very dark grayish brown, dark brown or dark grayish brown (10YR 3/2, 3/3, 4/2). It is very gravelly to extremely gravelly loamy coarse sand or very gravelly to extremely gravelly coarse sand with 0.5 to 8 percent clay and 35 to 70 percent pumice gravel. Reaction is strongly to medium acid.

The C horizon is composed of stratified layers of ash and pumice. It is primarily light gray (10YR 7/2). Moist color is grayish brown (10YR 5/2). Other colors are light gray and white (10YR 6/1, 7/1, 8/1, 8/2). Moist colors are black to pale brown (10YR 2/1, 3/1, 3/2, 4/3, 5/3, 6/2, 6/3). It is very gravelly to extremely gravelly loamy coarse sand or very gravelly to extremely gravelly coarse sand with 0.5 to 8 percent clay and 40 to 90 percent pumice gravel. Reaction is strongly to slightly acid.

The 2C horizon is deeper than 40 inches and usually deeper than 60 inches. It is brown, yellowish brown or pale brown (10YR 5/3, 5/4, 6/3). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 3/4, 4/4).

Textures are sandy loam, gravelly sandy loam, or very cobbly to extremely cobbly sandy loam with 10 to 20 percent clay and 12 to 75 percent gravel, cobbles and stones. Reaction is medium acid to neutral.

Use and Vegetation: Used mainly as wildlife habitat

with some timber production (primarily firewood or pulpwood). Native vegetation is lodgepole pine, currant, and few white fir, red fir, sedges, pinemat and greenleaf manzanita, snowbrush, rabbitbrush, bitterbrush, squaw carpet, stipa and bottlebrush squirreltail.

TALLAC FAMILY

The Tallac family consists of moderately deep and deep, well drained soils that formed in residuum from granitic and metamorphic rocks. These soils occur on mountain sideslopes, ground moraines and ridges. Slopes range from 9 to 50 percent. The mean annual precipitation is 40 to 90 inches and the mean annual air temperature is about 42° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Pachic Xerumbrepts.

Typical Pedon: Tallac family loam - on a 40 percent southeast-facing slope at 5,600 feet elevation, under a cover of white fir, other mixed conifers, tree chinquapin, greenleaf manzanita and snowbrush. (Colors are for dry soil unless otherwise stated).

O-1/2 to 0 inches; matted decomposed conifer needles and twigs.

A-0 to 3 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 5 percent pebbles; medium acid (pH 5.7); clear smooth boundary.

Bw1-3 to 10 inches; dark brown (10YR 4/3) sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and coarse roots; common very fine and fine interstitial pores; 10 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

Bw2-10 to 15 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and coarse roots; common fine interstitial pores; 15 percent pebbles and 10 percent cobbles; neutral (pH 6.7); clear wavy boundary.

BC-15 to 25 inches; dark grayish brown (10YR 4/2) very cobbly sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 30 percent pebbles and 30 percent cobbles;

medium acid (pH 6.0); clear irregular boundary.

R-25+ inches; hard, fractured bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Jackson County, Oregon; 3 miles southeast of Mt. Ashland; NE 1/4 NE 1/4 Section 27, T. 40 S., R. 1 E.

Range in Characteristics: Tallac family soils are 20 to 60 inches deep. The mean annual soil temperature is 36 to 46° F.; mean January soil temperature is 30 to 35° F.; mean July soil temperature is 46 to 56° F. The soil temperature at a depth of 20 inches exceeds 41° F. from April 15 to November 20, and exceeds 47° F. from May 20 to October 15. The soil is dry between the depth of 12 to 24 inches from mid-July to mid-October and is moist in some or all parts the remainder of the year. The base saturation is assumed to be less than 50 percent throughout the soil.

The A horizon is very dark grayish brown, dark brown, dark grayish brown, grayish brown or brown (10YR 3/2, 3/3, 4/2, 4/3, 5/2, 5/3) dry, black, very dark brown, very dark gray or very dark grayish brown (10YR 2/1, 2/2, 3/1, 3/2) moist. It is a loam, sandy loam, gravelly to very gravelly loam, or cobbly to very cobbly loam with 5 to 37 percent coarse fragments. Reaction is very strongly acid to neutral.

The Bw horizon is dark grayish brown, brown, grayish brown, or olive (10YR 4/2, 4/3, 5/3; 2.5Y 5/2; 5Y 5/3) dry, very dark brown, very dark gray, very dark grayish brown, dark brown, or dark yellowish brown (10YR 2/2, 3/1, 3/2, 3/3, 3/4, 4/4) moist. It is a loam, sandy loam, gravelly sandy loam, very gravelly sandy loam or very cobbly sandy loam, with 15 to 75 percent coarse fragments. Clay content is 15 to 18 percent. Reaction is strongly acid to neutral.

The C horizon, when present, is yellowish brown, grayish brown, light brownish gray, olive gray, light olive brown, light yellowish brown, or olive (10YR 5/4; 2.5Y 5/2, 5/4, 6/2, 6/4; 5Y 5/2, 5/3) dry, and very dark gray, very dark grayish brown, dark grayish brown, or olive gray (10YR 3/1, 3/2; 2.5YR 4/2; 5Y 3/1, 4/2) moist. It is very gravelly loam or extremely cobbly loam with 50 to 80 percent coarse fragments. The family control section has greater than 30 percent coarse fragments. Reaction is strongly acid to neutral.

Use and Vegetation: These soils are primarily used for woodland, wildlife habitat and recreation. Native vegetation consists of red fir, ponderosa pine, sugar pine, white fir, incense cedar, Douglas-fir, pinemat manzanita,

squaw carpet, greenleaf manzanita, snowbrush, currant, snowberry, bush chinquapin, alders, willows, lupine, bedstraw and grasses.

TANGLE FAMILY

The Tangle family consists of deep well drained residual soils formed from ultramafic rocks. These soils occur on mountain sideslopes and landslide benches. Slopes range from 15 to 50 percent. The mean annual precipitation is 45 to 60 inches and the mean annual temperature is about 41° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, frigid Mollic Palexeralfs.

Typical Pedon: Tangle family very gravelly sandy loam - on a 25 percent concave northeast-facing slope at 5,200 feet elevation, under a Jeffrey pine - incense cedar stand. (Colors are for dry soil unless otherwise stated).

Oi-2 to 1 inches; fresh pine needles and twigs.

Oe-1 to 0 inches; decomposed pine needles.

A1-0 to 1 inches; dark brown (7.5yr 4/3) very gravelly sandy loam, dark reddish brown (5yr 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; 40 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

A2-1 to 6 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark reddish brown (5YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, few fine, and common medium roots; few fine and common very fine tubular and interstitial pores; 30 percent pebbles and 5 percent cobbles; slightly acid (pH 6.4); abrupt wavy boundary.

Bt1-6 to 16 inches; pale brown (10YR 6/3) very cobbly sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, and common fine, medium, and coarse roots; common very fine and fine tubular and interstitial pores; few thin clay films in pores and as bridges; 35 percent pebbles and 25 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

Bt2-16 to 28 inches; yellowish brown (10YR 5/4) very cobbly clay, brown (10yr 4/3) moist; strong medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine, common medium and coarse roots; few fine tubular pores; many moderately thick clay films on ped faces and in

pores; 20 percent pebbles and 30 percent cobbles; slightly acid (pH 6.4); abrupt smooth boundary.

Bt3-28 to 43 inches; yellowish brown (10YR 5/4) very stony clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure, slightly hard, friable, very sticky and very plastic; few very fine and coarse roots; few very fine tubular pores; continuous thick clay films on ped faces and in pores; 5 percent pebbles, 15 percent cobbles and 25 percent stones; slightly acid (pH 6.5); gradual wavy boundary.

Bt4-43 to 57 inches; dark yellowish brown (10YR 4/6) cobbly sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; many thick clay films on ped faces, in pores, and as bridges; 10 percent pebbles, 15 percent cobbles and 5 percent stones; slightly acid (pH 6.5); abrupt wavy boundary.

R-57+ inches; hard, highly fractured serpentinitized peridotite.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; 0.5 miles off Road 41N08 to Rock Fence Lake, about 100 yards before meadow on landslide bench below road; SE 1/4 SE 1/4 NE 1/4 Section 24, T. 41 N., R. 7 W.

Range in Characteristics: The soil is 40 to 60 inches deep to hard, fractured bedrock. The mean annual soil temperature is 38 to 46°F.; the mean January soil temperature is 30° to 35°F.; the mean July soil temperature is 45 to 55°F. The soil temperature exceeds 41°F. from April 15 to November 20, and is greater than 47°F. from May 20 to October 20. The soil between the depths of 16 to 25 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is medium to slightly acid. Throughout the whole soil, those particles less than 2mm in diameter contain greater than 40 percent (by weight) serpentine minerals.

The A horizon is brown (7.5YR 4/3, 4/4, 5/4). Moist color is dark reddish brown (5YR 3/2, 3/3, 3/4). It is very gravelly sandy loam or loam, with 30 to 45 percent gravel and 5 to 15 percent cobbles. Reaction is medium acid to neutral.

The Bt horizon is brown, strong brown, yellowish brown, or pale brown (10YR 4/6, 5/4, 6/3; 7.5YR 5/4, 5/6).

Moist colors are brown, dark yellowish brown, or dark brown (10YR 4/3, 4/4; 7.5YR 3/4, 4/4). It is very cobbly or very gravelly sandy loam, clay loam or clay in the upper Bt, and very stony or very cobbly clay loam or sandy clay loam in the lower Bt. There are 5 to 20 percent gravel, and 30 to 40 percent cobbles and stones. The weighted average of the family control section is greater than 35 percent clay. Reaction is slightly acid to neutral.

The R horizon is hard, highly fractured serpentized ultramafic rock. Some soil or saprolite may be present in fractures.

Use and Vegetation: Used for watershed, wildlife habitat, and timber production. The native vegetation includes Jeffrey pine, huckleberry oak, incense cedar and beargrass.

TEEWINOT FAMILY

The Teewinot family consists of very shallow or shallow, excessively drained residual soils formed from metamorphic, mafic plutonic or granitic parent material. These soils occur on mountain sideslopes and ridges. Slopes range from 50 to 90 percent. The mean annual precipitation is 60 to 110 inches and the mean annual air temperature is about 38°F. Elevations are greater than 6,200 feet. The climate is high elevation mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, mixed Lithic Cryumbrepts.

Typical Pedon: Teewinot family extremely gravelly loam - on a 21 percent west-facing slope at 6,700 feet elevation, under a cover of mountain hemlock, red fir, western white pine, penstemon and beargrass. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; loose conifer needles and other litter.

A1-0 to 1 inches; very dark gray (10YR 3/1) extremely gravelly loam, black (10YR 2/1) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; few roots; very strongly acid (pH 4.8); clear smooth boundary.

A2-1 to 4 inches; very dark grayish brown (10YR 3/2) very gravelly loam, black (10YR 2/1) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant roots; strongly acid (pH 5.2); clear smooth boundary.

A3-4 to 9 inches; dark brown (10YR 3/3) extremely gravelly loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic, com-

mon roots; medium acid (pH 5.6); abrupt irregular boundary.

R-9+ inches; highly fractured bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; 0.2 miles southwest of Preston Peak; Section 27, T. 17 N., R. 5 E.

Range in Characteristics: The soil is less than 20 inches deep in metamorphic, mafic plutonic or granitic bedrock. The mean annual soil temperature is 32 to 46°F.; the mean summer soil temperature is 40 to 46°F. where an O horizon is present, and 50 to 55°F. where no O horizon is present. The soil temperature exceeds 41°F. from May 15 to November 10, and is greater than 47°F. from July 1 to October 10. The soil between the depths of 9 and 20 inches is dry in all parts from August 10 to October 10.

The A horizon is very dark gray, very dark grayish brown, dark brown, dark grayish brown, dark yellowish brown, brown, or yellowish brown (10YR 3/1, 3/2, 3/3, 4/2, 4/3, 4/4). Moist colors are black, very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/1, 2/2, 3/1, 3/2, 3/3). It is very gravelly to extremely gravelly loam or sandy loam with 25 to 70 percent gravels and 10 to 30 percent cobbles. Reaction is medium to very strongly acid. Percent base saturation (by NH₄OAc) is assumed to be less than 50 percent.

Use and Vegetation: Used for watershed, wildlife, timber production and recreation. The native vegetation is red fir, mountain hemlock, western white pine, greenleaf and pinemat manzanita, brewer spruce, thinleaf huckleberry, phlox, rush, penstemon, sedum, sedge, perennial bunchgrass and other forbs.

TOADLAKE FAMILY

The Toadlake family consists of deep, well drained soils formed from serpentinitic rocks. These soils occur on colluvial footslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 50 to 60 inches and the mean annual temperature is about 42° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, frigid Typic Haploxeralfs.

Typical Pedon: Toadlake family gravelly loam - on a 45 percent concave northeast-facing slope at 6,400 feet elevation, under a mixed conifer-shrub stand. (Colors are for dry soil unless otherwise stated.)

O-2 to 0 inches; matted and partially decomposed conifer needles.

A-0 to 3 inches; brown (7.5YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; slightly sticky and slightly plastic; common very fine and fine roots; few thin clay films as bridges and in pores; 20 percent pebbles and 2 percent cobbles; slightly acid (pH 6.3); clear smooth boundary.

Bt1-3 to 12 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark brown (10YR 4/3) moist; weak fine and medium granular structure; slightly sticky and slightly plastic; few very fine, and common fine, medium, and coarse roots; few thin clay films as bridges and in pores; 40 percent pebbles, 10 percent cobbles and 10 percent stones; slightly acid (pH 6.5); clear wavy boundary.

Bt2-12 to 22 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly sticky and slightly plastic, few thin and moderately thick clay films as bridges, in pores, and on ped faces; 40 percent pebbles, 2 percent cobbles and 1 percent stones; neutral (pH 7.0); clear wavy boundary.

Bt3-22 to 41 inches; light yellowish brown (10YR 6/4) very gravelly clay loam; olive brown (2.5Y 4/3) moist; moderate medium angular blocky structure; slightly sticky and slightly plastic; common fine, medium, and coarse roots; common moderately

thick clay films as bridges, in pores, and on ped faces; 40 percent pebbles, 2 percent cobbles and 1 percent stones; mildly alkaline (pH 7.5); clear wavy boundary.

R-41+ inches; hard, moderately fractured serpentinite.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; NE 1/4 SW 1/4 Section 12, T. 40 N., R. 7 W.

Range in Characteristics: The soil is 40 to 60 inches deep in weathered colluvium. The mean annual soil temperature is 35 to 46°F.; the mean January soil temperature is 30 to 35°F.; the mean July soil temperature is 45 to 55°F. The soil temperature exceeds 41°F. from April 15 to November 20 and is greater than 47°F. from May 20 to October 20. The soil between the depths of 7 and 22 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly acid to mildly alkaline.

The A horizon is brown, strong brown, or yellowish brown (7.5YR 5/2, 5/4, 5/6; 10YR 5/3, 5/4, 5/6). Moist colors are dark brown, brown, strong brown, or dark yellowish brown (7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 3/3, 3/4, 4/3, 4/4). It is gravelly or very gravelly with textures of sandy loam or loam. There are 20 to 40 percent gravel and 2 to 10 percent cobbles. When the moist color value is 3.5 or less the epipedon is less than 4 inches thick. Reaction is slightly acid.

The Bt horizon is brown, light brown, yellowish brown, pale brown, or light yellowish brown (7.5YR 5/4, 6/4, 10YR 5/3, 5/4, 6/3, 6/4). Moist colors are brown, dark brown, dark yellowish brown, or olive brown (10YR 4/3, 4/4; 2.5Y 4/3, 4/4). Textures are very gravelly or gravelly loam, sandy clay loam, or clay loam, with 35 to 50 percent gravel, 2 to 15 percent cobbles and 1 to 10 percent stones. Percent base saturation is greater than 75 percent throughout the upper 30 inches of the argillic. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used for timber production, watershed and wildlife habitat. The native vegetation includes Jeffrey pine, incense cedar, white fir, western white pine, huckleberry oak, pinemat manzanita, green-leaf manzanita and beargrass.

TROJAN FAMILY

The Trojan family consists of deep to very deep, well drained soils that formed in residuum from basaltic and andesitic rock. Trojan family soils are on volcanic upland terraces and fans. Slopes range from 2 to 9 percent. The mean annual precipitation is 15 to 25 inches and the mean annual temperature is about 44°F. Elevations are 4,600 to 5,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Ultic Argixerolls.

Typical Pedon: Trojan family loam - on a 2 percent sloping flat at 4,880 feet elevation, under Jeffrey pine, bitterbrush, big sagebrush, rabbitbrush, curl-leaf mountain mahogany, bottlebrush squirreltail, cheat-grass, Idaho fescue, prairie junegrass and other perennial grasses and forbs. (Colors are for dry soil unless otherwise stated).

O-1/2 to 0 inches; fresh pine needles and twigs.

A1-0 to 4 inches; brown (10YR 4/3) loam, dark brown (7.5YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine and fine interstitial pores; 5 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); abrupt wavy boundary.

A2-4 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and few fine interstitial pores; 6 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

Bt1-11 to 22 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, very friable, nonsticky and nonplastic; few thin clay films on ped faces; few very fine and coarse roots; common very fine and fine interstitial and few medium tubular pores; 5 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); abrupt wavy boundary.

Bt2-22 to 29 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; strong medium subangular and angular blocky structure; very hard, friable, slightly sticky and slightly plastic; common moderately thick clay films on ped faces, in pores and bridging; few very fine

and fine roots; few very fine and fine tubular pores; 20 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

Bt3-29 to 44 inches; brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; strong medium angular and subangular blocky structure; very hard, friable, sticky and plastic; many moderately thick clay films on ped faces, pores and bridging; few very fine and fine roots; common very fine and fine tubular pores; 4 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

Bt4-44 to 58 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; strong medium and coarse subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; many thin and moderately thick clay films on ped faces, in pores and bridging; few fine roots; few very fine and common fine tubular pores; 6 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

R-58+ inches; hard, slightly fractured basalt.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 5 miles west-northwest of Bray, California, 5 miles northeast of Deer Mountain, 1 mile southeast of U.S. 97; approximately 50 yards north of dirt road; SE 1/4 NE 1/4 Section 15, T. 44 N., R. 2 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 45 to 47°F.; mean January soil temperature is 34 to 36°F.; and mean July soil temperature is 55 to 58°F. The soil temperature exceeds 41°F. from March 25 to November 25 and exceeds 47°F. from April 25 to November 5. The soil between the depth of 6 and 18 inches is dry in all parts from July 25 to October 20 and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. Base saturation ranges from 50 to 75 percent throughout the upper 30 inches of soil and greater than 50 percent below.

The A horizon is dark grayish brown, dark brown, grayish brown, brown or yellowish brown (10YR 4/2, 4/3, 5/2, 5/3, 5/4). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is loam or sandy loam with 8 to 18 percent clay and 0 to 10 percent gravel. Reaction is strongly acid to neutral.

The Bt horizon is yellowish brown, pale brown, light yellowish brown or brown (10YR 5/4, 6/3, 6/4; 7.5YR

4/4, 5/4). Moist colors are dark brown or brown (10YR 3/3, 4/3; 7.5YR 3/2, 3/4, 4/4). It is loam, sandy loam, clay loam, sandy clay loam or gravelly sandy clay loam with 18 to 28 percent clay and 0 to 25 percent gravels and cobbles. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used for rangeland and wildlife

habitat with some timber production. Native vegetation includes ponderosa pine, Jeffrey pine, juniper, bitterbrush, big sagebrush, rabbitbrush, dwarf sagebrush, curleaf, mountain mahogany, bottlebrush squirreltail, cheatgrass, brome, Idaho fescue, prairie junegrass and other perennial grasses and forbs.

VIPONT FAMILY

The Vipont family consists of deep or very deep, well drained soils that formed in material weathered from basaltic or andesitic volcanic rocks. Vipont family soils are on volcanic mountain sideslopes. Slopes range from 15 to 50 percent. The annual precipitation is 12 to 15 inches and the mean annual temperature is about 43° F. Elevations are 4,400 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Pachic Argixerolls.

Typical Pedon: Vipont family loam - on a 20 percent northwest-facing slope at 5,400 feet elevation under a cover of rabbitbrush, mountain mahogany, bitterbrush, juniper, ponderosa pine, Idaho fescue, cheatgrass, brome and bluegrass. (Colors are for dry soil unless otherwise stated).

A1-0 to 1 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine platy structure parting to weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; 5 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

A2-1 to 4 inches; brown (10YR 4/3) cobbly loam, dark brown (7.5YR 3/2) moist; weak very fine subangular blocky structure parting to weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; few very fine interstitial pores; 5 percent pebbles and 10 percent cobbles; neutral (pH 7.0); clear smooth boundary.

A3-4 to 11 inches; brown (10YR 4/3) stony loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few thin clay films on ped faces; few very fine and fine roots; few very fine interstitial pores; 5 percent pebbles, 25 percent cobbles and 15 percent stones; neutral (pH 7.0); clear smooth boundary.

A4-11 to 25 inches; brown (10YR 4/3) stony loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky, and nonplastic; few thin clay films on ped faces; few very fine, fine and common medium roots; few very fine interstitial pores; 10 percent pebbles, 20 percent cobbles and 20 percent stones; neutral (pH 7.0); clear wavy boundary.

Bt1-25 to 40 inches; brown (10YR 4/3) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, friable, sticky and slightly plastic; many moderately thick clay films on ped faces; few very fine roots; 30 percent pebbles, 15 percent cobbles, and 10 percent stones; neutral (pH 7.0).

R-40+ inches; hard moderately fractured basaltic rock.

Type Location: Gooseneck District, Klamath National Forest; Siskiyou County, California; about 4.5 miles northeast of Bray, California, 3/4 mile northwest of Cedar Mountain; SE 1/4 SW 1/4 Section 25, T. 45 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 38 to 46° F.; mean January soil temperature is 33 to 36° F.; mean July soil temperature is 47 to 58° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 8 and 25 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. The mollic epipedon is greater than 20 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches of the soil and greater than 50 percent below.

The A horizon is grayish brown or brown (10YR 5/2, 5/3, 4/3). Moist colors are very dark brown, very dark grayish brown, or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is loam, gravelly loam, cobbly loam or stony loam with 13 to 18 percent clay and 10 to 50 percent rock fragments. Reaction is slightly acid to neutral.

The Bt horizon is brown (10YR 4/3, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is very gravelly to extremely gravelly, very cobbly to extremely cobbly or very stony to extremely stony sandy clay loam, loam or clay loam, with 25 to 35 percent clay and 50 to 75 percent gravel, cobbles and stones. Reaction is neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes greenleaf manzanita, bitterbrush, mountain mahogany, rabbitbrush, ponderosa pine, juniper, incense cedar, cheatgrass, brome, bottlebrush squirreltail, bluebunch wheatgrass, stipa, poas and fescue.

WASHOE FAMILY

The Washoe family soils consist of deep and very deep, well drained soils that formed in residuum and colluvium. These soils occur on terraces, mountain footslopes and glacial outwash deposits. Slopes range from 0 to 5 percent. The mean annual precipitation is 9 to 12 inches and the mean annual temperature is 49°F. Elevations are 4,400 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Xerollic Haplargids.

Typical Pedon: Washoe family loam - on a 2 percent slope at 4,500 feet elevation. (Colors are for dry soil unless otherwise noted).

O-1 to 0 inches; new to partially decomposed needles, twigs and leaves.

A1-0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; massive; loose, loose, slightly sticky and slightly plastic; many very fine roots; slightly acid (pH 6.5); clear smooth boundary.

A2-4 to 14 inches; pale brown (10YR 6/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, fine and coarse roots; many very fine interstitial pores; slightly acid (pH 6.5); clear wavy boundary.

Bt-14 to 36 inches; pinkish gray (7.5YR 6/2) very gravelly sandy clay loam, brown and dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; continuous moderately thick clay films on ped faces, pores and as bridges; few fine and medium roots; many very fine interstitial pores; 60 percent pebbles and 10 percent cobbles; slightly acid (pH 6.5).

C-36+ inches; profile continues in deep (>60 inches) alluvium.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; Section 12, T. 44 N., R. 1 W.

Range in Characteristics: Depth to a lithic or paralithic contact is 40 to 60+ inches. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 70° F. The soil temperature exceeds 41° F. from March 25 to November 20 and exceed 47° F. from April 15 to November 1. The soil is dry in all parts between the depths of 4 to 12 inches from June 10 to November 10.

The A horizons are dark grayish brown, brown, dark brown, grayish brown, or pale brown (10YR 4/2, 4/3, 5/2, 5/3, 6/3) dry. Moist colors are dark brown, very dark brown or very dark grayish brown (7.5YR 3/2; 10YR 2/2, 3/2). It is loam or sandy loam. Reaction is medium acid to neutral.

The Bt horizon is pinkish gray, very pale brown, light yellowish brown or yellowish brown (7.5YR 6/2; 10YR 5/4, 6/4, 7/4) dry. Moist colors are brown, dark brown or dark yellowish brown (7.5YR 3/4, 4/4; 10YR 3/4, 4/3). It is very gravelly sandy clay loam, very gravelly clay loam or very gravelly sandy loam. Rock fragments are 35 to 70 percent by volume. Reaction is slightly acid to neutral.

Use and Vegetation: These soils are used primarily for woodland and grazing. They also provide wildlife habitat and recreation. Native vegetation consists of ponderosa pine, incense cedar, mountain mahogany, western juniper, bottlebrush squirreltail, cheatgrass, rubber rabbitbrush, big sagebrush and dwarf sagebrush.

WEITCHPEC FAMILY

The Weitchpec family consists of moderately deep, well drained residual soils formed from serpentinitic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 30 to 70 inches and the mean annual temperature is about 50° F. Elevations are 2,000 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, mesic Typic Xerochrepts.

Typical Pedon: Weitchpec family very gravelly loam - on a 45 percent convex south-facing slope at 3,550 feet elevation, under a mixed conifer-huckleberry oak cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; loose fresh and decomposed litter.

A1-0 to 1 inches; dark grayish brown (10YR 4/2) very gravelly loam, black (10YR 2/1) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant very fine roots; medium acid (pH 5.9); abrupt smooth boundary.

A2-1 to 8 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; abundant roots; slightly acid (pH 6.1); clear smooth boundary.

Bw-8 to 14 inches; brownish yellow (10YR 6/5) very gravelly loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; medium acid (pH 5.9); gradual wavy boundary.

C-14 to 22 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, sticky and slightly plastic; common roots; medium acid (pH 6.0); abrupt irregular boundary.

R-22+ inches; slightly hard, weathered serpentinite.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Section 33,

T. 15 N., R. 6 E.

Range in Characteristics: Depth to a lithic or paralithic contact is 20 to 40 inches deep. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1 and is greater than 47° F. from March 20 to November 15. The soil between the depths of 9 to 28 inches is dry in all parts from July 15 to October 20 and moist in some or all parts the rest of the year. The soil is medium acid to neutral. Base saturation (By NH₄OAc) is assumed to be greater than 60 percent in some part between the depths of 10 to 30 inches as other profiles indicate.

The A horizon is yellowish red, reddish brown, dark grayish brown, and light yellowish brown (5YR 4/4, 4/6, 5/4; 10YR 4/2, 6/4). The moist colors are black, dark reddish brown, reddish brown, brown or dark brown (2.5YR 3/4; 5YR 3/4, 4/4; 7.5YR 4/4; 10YR 2/1). It is gravelly or very gravelly loam or sandy loam. There are 35 to 55 percent gravel and 10 to 20 percent cobbles. Reaction is medium to slightly acid.

The Bw horizon is yellowish red, reddish yellow, or light yellowish brown (5YR 5/6; 7.5YR 6/6, 6/8; 10YR 6/4, 6/5). Moist colors are reddish brown, yellowish red, strong brown and dark brown (2.5YR 4/4; 5YR 4/6; 7.5YR 4/4, 5/6). Texture is very gravelly or extremely gravelly loam or sandy loam, with 35 to 60 percent gravels and 25 to 30 percent cobbles. Reaction is medium to slightly acid.

The C horizon is light brown, reddish yellow, yellowish brown, light yellowish brown, or very pale brown (7.5YR 6/6, 7/6; 10YR 5/6, 6/4, 7/4, 8/4). Moist colors are brown, strong brown, dark yellowish brown, or yellowish brown (7.5YR 5/4, 5/6; 10YR 4/4, 5/4). It is very gravelly or extremely gravelly loam or silty loam, with 35 to 80 percent gravels and 20 to 30 percent cobbles. Reaction is medium to slightly acid.

Use and Vegetation: Used for timber, watershed and wildlife habitat. The native vegetation includes Douglas-fir, sugar pine, ponderosa pine, incense cedar, tanoak, pinemat manzanita, beargrass, madrone, huckleberry oak, and California fescue.

WINTONER FAMILY

The Wintoner family consists of deep to very deep, well drained soils that formed in material weathered from metamorphic and igneous rocks. Wintoner soils are on mountain sideslopes, volcanic uplands, footslopes and flow terraces. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 65 inches and the mean annual temperature is about 42°. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Ultic Haploxeralfs.

Typical Pedon: Wintoner family gravelly loam - on a 16 percent northwest-facing slope at 4,800 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; mixed and loosely matted bark, stems, conifer needles and fibrous humus.

A1-0 to 5 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and medium and few fine roots; 20 percent pebbles and 10 percent cobbles; neutral (pH 6.8); clear wavy boundary.

A2-5 to 11 inches; light brown (7.5YR 6/4) cobbly loam, dark reddish brown (5YR 3/3) moist; weak and moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common medium and few fine, very fine and coarse roots; 10 percent pebbles and 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt1-11 to 21 inches; light reddish brown (5YR 6/4) gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common clay bridging and few thin clay films on ped faces; common coarse and medium and few fine roots; 20 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); gradual wavy boundary.

Bt2-21 to 29 inches; light reddish brown (5YR 6/4) gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium angular and subangular blocky structure; slightly hard, friable, sticky and plastic; few thin and moderately thick clay films on ped faces and in pores; common coarse and few medium and fine roots; 15 percent pebbles and 5

percent cobbles; mildly alkaline (pH 7.5); clear wavy boundary.

Bt3-29 to 60+ inches; light reddish brown (5YR 6/4) extremely gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films in pores and on ped faces; 65 percent pebbles and 8 percent cobbles; mildly alkaline (pH 7.5).

Type Location: Goosenest Ranger District, Klamath National Forest; Siskiyou County, California; 4 miles northwest of Willow Creek Peak, 3 miles west of Lodgepole Station and 1/4 mile southwest of road crossing at Cold Creek; NW 1/4 Section 10, T. 46 N., R. 4 W.

Range in Characteristics: Depth to a lithic or paralithic contact is 40 to 60+ inches. Mean annual temperature is 37 to 46°F.; mean January soil temperature is 32 to 36°F.; and mean July soil temperature is 47 to 57°F. The soil temperature exceeds 41°F. from April 10 to November 20 and exceeds 47°F. from May 15 to October 25. The soil between a depth of 8 and 23 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. The base saturation is less than 75 percent within the argillic horizon.

The A horizon is very dark gray, dark brown, grayish brown, brown, light brown or reddish brown (10YR 3/1, 4/3, 5/2, 5/3; 7.5YR 5/4, 6/4; 5YR 4/4). Moist colors are black, very dark brown, very dark grayish brown, dark brown or dark reddish brown (10YR 2/1, 2/2, 3/2, 3/3; 7.5YR 3/2, 3/4; 5YR 3/3). It is loam, gravelly loam or cobbly loam with 13 to 20 percent clay and 5 to 35 percent gravel, cobbles and stones. Reaction is acid to mildly alkaline.

The Bt horizon is brown, pale brown or light reddish brown (10YR 5/3, 6/3, 6/4, 6/6; 7.5YR 6/4; 5YR 4/3, 6/4). Moist colors are dark yellowish brown, yellowish brown, dark brown or dark reddish brown (10YR 3/3, 3/4, 4/3, 4/4, 5/4; 7.5YR 3/4, 4/4; 5YR 3/3, 3/4). It is loam, gravelly to extremely gravelly loam, cobbly to very cobbly loam, very stony loam, clay loam, cobbly clay loam, stony clay loam, gravelly clay loam or gravelly sandy clay loam with 20 to 38 percent clay and less than 35 percent gravels, cobbles and stones. The weighted average of the family control section is 20 to 35 percent clay and less than 35 percent rock fragments. Reaction is very strongly acid to mildly alkaline.

Use and Vegetation: Used primarily for timber production, wildlife habitat and watershed. Native vegetation includes white fir, ponderosa pine, Douglas-fir, red fir, lodgepole pine, incense cedar, chinquapin, pine-

mat manzanita, ribes, snowbrush, bitterbrush, greenleaf manzanita, deerbrush, lupine, pussy paws, carex, brome, fescue and bottlebrush squirreltail.

WINTONER FAMILY, PUMICE OVERBURDEN

The Wintoner family, pumice overburden consists of very deep, well to somewhat excessively drained soils that formed in pyroclastic materials deposited over soil and basaltic or andesitic rock. These soils are on volcanic mountain sideslopes, benches and ridges. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40° F. Elevations are 5,000 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Ultic Haploxeralfs (pumice overburden phase).

Typical Pedon: Wintoner family extremely gravelly coarse sand - on a 2 percent sloping volcanic upland flat at 5,800 feet elevation, under lodgepole pine and buckwheat. (Colors are for dry soil unless otherwise stated. When described, 6/4/79, the soil was moist throughout except for the overburden).

A1-0 to 2 inches: extremely gravelly coarse sand; single grain; 90 percent pumice pebbles; strongly acid (pH 5.3); clear smooth boundary.

A2-2 to 13 inches; light yellowish brown (10YR 6/4) very gravelly coarse sand, dark brown (10YR 3/3) moist; single grained: loose, loose, nonsticky and nonplastic; few very fine, fine, and medium roots; many fine and medium interstitial pores; 55 percent pumice pebbles; strongly acid (pH 5.4); abrupt wavy boundary.

2A1b-13 to 30 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, and nonplastic; few very fine, fine, and coarse roots; common very fine and fine interstitial and few very fine tubular pores; 8 percent pebbles; medium acid (pH 5.9); gradual smooth boundary.

2Bt1b-30 to 43 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; few very fine roots; few very fine interstitial and tubular pores; 13 percent pebbles; slightly acid (pH 6.1); clear wavy boundary.

2Bt2b-43 to 64 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5 YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films in pores and bridging; few very fine

and fine roots; common fine tubular and few very fine interstitial pores; 3 percent pebbles; slightly acid (pH 6.2).

Crb-64+ inches; cinders.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 5.5 miles west of Little Glass Mountain and 2.5 miles south southwest of Tamarack Flat; SW 1/4 NE 1/4 Section 18, T. 43 N., R. 2 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. Mean annual soil temperature is 36 to 46° F.; mean January soil temperature is 30 to 35° F.; and mean July soil temperature is 43 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20 and exceeds 47° F. from June 1 to October 20. The soil between a depth of 15 to 34 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is composed of layers of ash and pumice. It is very dark gray, gray, light gray, dark grayish brown, grayish brown, yellowish brown, light yellowish brown, or white (10YR 3/1, 4/2, 5/1, 5/2, 5/4, 6/4, 7/2, 8/2). Moist colors are black, very dark gray, very dark grayish brown, dark brown, dark yellowish brown, grayish brown, brown, light grayish brown, or pale brown (10YR 2/1, 3/1, 3/2, 3/3, 4/3, 4/6, 5/2, 5/3, 6/2, 6/3) or a mixture of the above. It is gravelly to extremely gravelly coarse sand, gravelly to extremely gravelly loamy coarse sand, or gravelly to very gravelly coarse sandy loam with 5 to 8 percent clay and 15 to 90 percent pumice gravel. Reaction is strongly to medium acid.

The 2Ab horizon is yellowish brown or brown (10YR 5/4, 5/3; 7.5YR 5/4). Moist colors are dark yellowish brown or dark brown (10YR 3/4, 4/3; 7.5YR 3/4). Texture is sandy loam, gravelly sandy loam or loam, with 5 to 18 percent clay and 5 to 20 percent gravel. Reaction is strongly to slightly acid.

The 2Btb horizon is yellowish brown, light yellowish brown, or light brown (10YR 5/6, 6/4; 7.5YR 6/4). Moist colors are dark yellowish brown or dark brown (10YR 3/4, 3/6, 4/4; 7.5YR 4/4). It is sandy loam, gravelly sandy loam, loam, or gravelly loam, with 5 to 22 percent clay and 3 to 35 percent gravel and cobbles. Reaction is medium acid to neutral.

Some pedons have a 2Cb horizon that is similar in color to the 2Bb horizon, but is one to two chromas or values

lower than the horizons above. It is also similar to the 2Bb horizon in texture except for a marked increase in coarse fragments. Reaction is medium acid to neutral.

Use and Vegetation: Used mainly for timber production and wildlife habitat. Native vegetation is lodgepole pine, ponderosa pine, white fir, Douglas-fir, incense

cedar, sugar pine, a few red fir, big sagebrush, snowbrush, greenleaf manzanita, rabbitbrush, bitterbrush, squaw carpet, Oregon grape, deerbrush, currant, wild rose, gooseberry, snowberry and perennial grasses, usually bottlebrush squirreltail, stipas and a few wheat-grasses.

WOODSEYE FAMILY

The Woodseye family consists of shallow, well drained soils formed in residuum from metamorphic rocks. These soils occur on mountain sideslopes and ridges. Slopes range from 50 to 90 percent. The mean annual precipitation is 60 to 100 inches and the mean annual temperature is 43° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Lithic Xerumbrepts.

Typical Pedon: Woodseye family very gravelly loam - on a 60 percent southwest-facing slope at 5,450 feet elevation, under a cover of huckleberry oak, squaw carpet, manzanita, and a few scattered white fir and incense cedar. (Colors are for dry soil unless otherwise noted).

O-1/2 to 0 inches; loose shrub leaves and herbaceous material.

A1-0 to 2 inches; dark grayish brown (10YR 4/2) very gravelly loam, black (10YR 2/1) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; 50 percent pebbles; strongly acid (pH 5.1); clear smooth boundary.

A2-2 to 7 inches; dark brown (10YR 4/3) very gravelly loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; 40 percent pebbles; very strongly acid (pH 4.8); gradual smooth boundary.

C-7 to 19 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, slightly sticky and nonplastic; 50 percent pebbles; very strongly acid (pH 4.8); abrupt irregular boundary.

R-19+ inches; fractured hard metamorphic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; about 1.4 mile southeast of Buckhorn Mountain on Big Ridge in the Marble Mountain Wilderness area; SW 1/4 SE 1/4 Section 16, T. 44 N., R. 12 W., Mount Diablo Base Meridian.

Range in Characteristics: Depth to a lithic contact is less than 20 inches deep. Mean annual soil temperature is about 37 to 47° F.; mean January soil temperature is 30 to 39° F.; mean July soil temperature is 41 to 62° F. The soil temperature at the bedrock contact exceeds 41° F. from April 1 until November 1. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is brown, dark grayish brown or dark yellowish brown (10YR 4/2, 4/3, 4/4, 5/3) dry, and black, very dark grayish brown, or dark brown (10YR 2/1, 3/2, 3/3; 7.5YR 3/2) moist. It is gravelly or very gravelly loam. Coarse fragments are 25 to 50 percent by volume. Reaction is medium acid to very strongly acid. Base saturation (by NH₄ OAc) is assumed to be less than 50 percent.

The C horizon is brown or yellowish brown (10YR 5/3, 5/4) dry, dark brown or very dark grayish brown (10YR 3/2, 3/3) moist. It is a very gravelly loam. Coarse fragments are 50 to 60 percent by volume. Reaction is slightly acid to very strongly acid.

Use and Vegetation: Used mostly for watershed and wildlife. Native vegetation consists of brushfields of huckleberry oak, squaw carpet, greenleaf and pinemat manzanita, snowbrush, wild buckwheat, Indian paintbrush, lupine and bittercherry with a few scattered red fir, white fir and incense cedar.

WORLEY FAMILY

The Worley family consists of deep and very deep, well drained soils formed in residuum from basic plutonic rock. Worley family soils are on mountain footslopes and undulating flats. Slopes range from 2 to 30 percent. The mean annual precipitation is 30 to 40 inches and the mean annual temperature is about 47.o.F. Elevations are 3,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winterS.

Taxonomic Class: Fine, montmorillonitic, mesic Mollic Palexeralfs

Typical Pedon: Worley family loam - on an 8 percent southeast-facing slope at 4,250 feet elevation, under mixed conifers, shrubs, forbs and grasses. (Colors are for dry soil unless otherwise stated)

O-1 to 0 inches; fresh loose needles and twigs

A1-0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few thin clay films on ped faces and as bridges; common very fine roots; 5 percent p ebbles; mildly alkaline (pH 7.5); clear smooth boundary

A2-2 to 8 inches; brown (7.5YR 5/4) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, friable, sticky and plastic; common thin clay films on ped faces, lining pores and as bridges; few very fine, medium and common fine roots; 3 percent pebbles; neutral (pH 7.0); clear smooth boundary

Bt1-8 to 17 inches; yellowish brown (10YR 5/4) clay, yellowish brown (10YR 5/4) moist; strong coarse subangular blocky structure; hard, firm, very sticky and very plastic; pressure faces occur on peds; few very fine, coarse and common fine and medium roots; 3 percent pebbles; slightly acid (pH 6.5); clear smooth boundary

Bt2-17 to 35 inches; yellowish brown (10YR 5/4) clay, yellowish brown (10YR 5/4) moist; strong subangular blocky structure; hard firm, very sticky and

very plastic; pressure faces occur on peds; few fine and medium roots; 3 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary

Bt3-35 to 60+ inches; yellowish brown (10YR 5/6) clay loam, dark yellowish brown (10YR 4/4) moist; strong coarse subangular blocky structure; hard, firm, sticky and plastic; pressure faces occur on peds; few very fine, fine medium and coarse roots; 5 percent pebbles; slightly acid (pH 6.5)

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; SE 1/4 SW 1/4 Section 32, T. 47 N., R. 7 W

Range in Characteristics: Depth to lithic contact is 40 to 60+ inches. Mean annual soil temperature is 47 to 52.o.F.; mean January soil temperature is 34 to 37.o.F.; mean July soil temperature is 52 to 65.o.F. The soil temperature exceeds 41.o.F. from March 10 to December 1 and exceeds 47.o.F. from April 10 to November 10. The soil between the depths of 6 to 16 inches is dry from July 20 to October 20 in most years and moist in some or all parts the rest of the year.

The A horizon is grayish brown or brown (10YR 5/2, 5/3; 7.5YR 5/ 4). Moist colors are very dark grayish brown or dark brown (5YR 3/3; 10YR 3/2, 3/3). It is loam, clay loam or very gravelly sandy clay loam. Reaction is neutral to mildly alkaline

The Bt horizon is yellowish brown or brown (10YR 5/4, 5/6; 7.5YR 5/4). Moist colors are dark yellowish brown or yellowish brown (7.5YR 4/4; 10YR 4/4, 5/4). It is gravelly clay, gravelly clay loam, clay loam or clay. Reaction is neutral or slightly acid.

Use and Vegetation: Used mainly for timber production, watershed, wildlife habitat and range. Native vegetation is ponderosa pine, incense cedar, white oak, greenleaf and whiteleaf manzanita, rabbitbrush, western mountain mahogany, silktassel, buckbrush, bottlebrush squirreltail, Idaho fescue, dogbane, lupine, sedge, bedstraw and vetch.

ZEIBRIGHT FAMILY

The Zeibright family consists of moderately deep, well drained residual and colluvial soils formed from granitic rocks. These soils occur on broad mountain sideslopes and ridges. Slopes range from 30 to 70 percent. The mean annual precipitation is 35 to 50 inches and the mean annual temperature is 51.o. F. Elevations are 1,500 to 5,000 feet . The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Entic Xerumbrepts.

Typical Pedon: Zeibright family gravelly loam - on a 55 percent southeast- facing slope at 4,400 feet elevation under a cover of Douglas-fir, ponderosa pine, sugar pine, black oak and deerbrush. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; matted conifer needles and broadleaves.

A1-0 to 5 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; common very fine and fine interstitial pores; 10 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

A2-5 to 7 inches thick; brown (10YR 5/3) very gravelly coarse sandy loam, dark brown (10 YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine and medium, and common very fine roots; common very fine and fine interstitial pores; 40 per cent pebbles and 5 percent cobbles; medium acid (pH 6.0); gradual wavy boundary.

C1-7 to 18 inches; yellowish brown (10YR 5/4) very gravelly loamy coarse sand, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 50 percent pebbles and 10 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

C2-18 to 30 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, yellowish brown (10YR

5/4) moist; massive; loose, loose, nonsticky and nonplastic; few very fine roots; common very fine in terstitial pores; 75 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); gradual wavy boundary.

Cr-30+ inches; soft, weathered granitic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Jackson County, Oregon; on Road 40S06 along Grouse Creek, SW 1/4 SW 1/4 Section 32, T. 41 S., R. 1 E.

Range in Characteristics: Depth to a lithic or paralithic contact is 20 to 40 inches deep. The mean annual soil temperature is 47 to 59.o. F.; the mean January soil temperature is 36 to 45.o. F.; the mean July soil temperature is 55 to 73.o. F. The soil temperature at a depth of 20 inches exceeds 41.o. F. from February 20 to December 1 and exceeds 47.o. F. from March 20 to November 15. The soil is dry between the depths of 15 and 40 inches, or the lithic contact, from July 15 to October 20 in most years, and is moist in some or all parts the remainder of the year.

The A horizon is dark grayish brown, brown, grayish brown, or yellowish brown (10YR 4/2, 4/3, 5/2, 5/3, 5/4). Moist colors are very dark brown, very dark grayish brown, or dark brown (10 YR 2/2, 3/2, 3/3). It is a loam or coarse sandy loam and may be gravelly or very gravelly. It has 10 to 40 percent gravel and 0 to 5 percent cobbles. Reaction is medium acid to neutral.

The C horizon is yellowish brown, pale brown, light yellowish brown or very pale brown (10YR 5/4, 6/3, 6/4, 7/3, 7/4). Moist colors are brown, dark yellowish brown or yellowish brown (10YR 4/3, 4/4, 5/3, 5/4). It is very gravelly or extremely gravelly loamy coarse sand. It has 40 to 75 percent gravel and 2 to 10 percent cobbles. Reaction is strongly acid to neutral.

Use and Vegetation: Used primarily for timber production, rangeland and wildlife habitat. Native vegetation consists of Douglas-fir, ponderosa pine, white fir, incense cedar, sugar pine, black oak, big leaf maple, deerbrush, white leaf and greenleaf manzanita, chinquapin and snowbrush.

MOLLIC PALEXERALFS

Mollic Palexeralfs are moderately deep, well drained residual soils formed from cemented till. These soils occur on broad ridges, mountain sideslopes and colluvial slopes. Slopes range from 15 to 50 percent. The mean annual precipitation is 30 to 50 inches and the mean annual temperature is 42.o.F. Elevations are 5,000 to 6,800 feet . The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Mollic Palexeralf very gravelly sandy clay loam - on a 28 percent slope at 5,700 feet elevation, under a cover of Jeffery pine, incense cedar, Douglas-fir, white fir, greenleaf manzanita, squaw carpet, California coffeeberry, huckleberry oak and California fescue. (Colors are for dry soil unless otherwise stated).

Oi-4 to 1 inches; fresh conifer needles and twigs.

Oe-1 to 0 inches; decomposed needles.

A1- -0 to 7 inches; brown (7.5YR 5/4) very gravelly sandy clay loam, dark reddish brown (5YR 3/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine, medium, and coarse roots; 40 percent pebbles, 10 percent cobbles and 15 percent stones; neutral (pH 7.0); clear smooth boundary.

Bt1-7 to 17 inches; brown (7.5YR 5/4) gravelly clay, dark brown (7.5YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, and coarse and common medium roots; pressure faces on peds; 25 percent pebbles; neutral (pH 7.0); gradual smooth boundary.

BC-17 to 28 inches; brown (10YR 5/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, and

medium roots; 20 percent pebbles and 3 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.

Cr-28+ inches; soft, weathered cemented till with structure of parent material evident.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 1/4 mile north of Rock Fence Creek; NE 1/4 NW 1/4 Section 35, T. 41 N., R. 7 W., Mount Diablo Base Meridian.

Range in Characteristics: Depth to weathered cemented till is 20 to 40 inches. The mean annual soil temperature is 40 to 44.o.F. The soils are usually dry between the depths of 9 and 23 inches from August 1 to October 15 in most years, and are moist in some or all parts the remainder of the year.

The A horizon is brown (7.5YR 5/4, 4/2). Moist colors are dark reddish brown or dark brown (5YR 3/3; 7.5YR 3/2). It is extremely gravelly, very gravelly or very stony sandy clay loam. Rock fragments average 65 to 75 percent by volume. Reaction is neutral to mildly alkaline.

The Bt horizon is dark brown, dark yellowish brown or brown (10YR 4/3, 4/4; 7.5YR 5/4). Moist colors are dark brown, dark yellowish brown or brown (10YR 4/3, 4/4, 5/3, 5/4; 7.5YR 4/4). It is clay, gravelly clay, cobbly clay or gravelly clay loam. Rock fragments average 10 to 35 percent by volume. Reaction is neutral to mildly alkaline.

The Cr horizon is soft, weathered cemented till.

Use and Vegetation: Used primarily for timber production, wildlife habitat and rangeland. Native vegetation is Jeffrey pine, Douglas-fir, white fir, incense cedar, greenleaf manzanita, squaw carpet, coffeeberry, huckleberry oak, and California fescue.

LITHIC MOLLIC HAPLOXERALS

Lithic Mollic Haploxeralfs are very shallow or shallow well drained residual soils formed from serpentinitic, metasedimentary or igneous rocks. These soils occur on steep to very steep mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 30 to 80 inches and the mean annual temperature is 42 to 49.o.F. Elevations are 1,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Lithic Mollic Haploxeralf very gravelly sandy loam - on a 35 percent northeast-facing slope at 6,200 feet elevation under a few white fir and juniper with mountain mahogany, greenleaf manzanita, wild buckwheat, big sagebrush, huckleberry oak, Indian paintbrush, wild onion and bottlebrush squirreltail. The soil surface is 55 percent bare ground with a gravel pavement. (Colors are for dry soil unless otherwise stated.)

A-0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, non-sticky and nonplastic; few very fine and fine roots; 45 percent pebbles; medium acid (pH 5.8); clear wavy boundary.

Bt1-3 to 6 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few thin clay films in pores, on ped faces and as bridges; few very fine and fine roots; 35 percent pebbles and 5 percent cobbles and stones; medium acid (pH 5.8); clear wavy boundary.

Bt 2-6 to 14 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few thin clay films in pores, on ped faces and as bridges; few very fine and fine roots; 20 percent pebbles and 50 percent cobbles and stones; medium acid (pH 5.8); abrupt irregular boundary.

R-14+ inches; fractured metamorphic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; 1/4 mile northwest of Lilly Pad Lake, 1 mile west-northwest of Kangaroo Lake on trail; SE 1/4 SE 1/4 Section 10, T. 40 N., R. 7 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. The mean annual soil temperature is 38 to 59.o.F. The soil between a depth of 7 and 14 inches or to the lithic contact is dry in all parts from July 20 to October 15 in most years, and is moist in some or all parts the rest of the year.

The A horizon is brown or grayish brown (7.5YR 4/4, 5/4; 10YR 4/3, 5/2, 5/3). Moist colors are dark brown, very dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 2/2, 3/2, 3/3). Colors meet mollic criteria either on depth, or by having bedrock directly beneath the epipedon. It is loam or sandy loam and may be gravelly or very gravelly. Rock fragments average 15 to 50 percent. Reaction is strongly acid to mildly alkaline. Base saturation is less than 50 percent.

The Bt horizon is brown, pale brown, yellowish brown, or light yellowish brown (7.5YR 4/4 ; 10YR 5/3, 5/4, 6/3, 6/4). Moist colors are dark brown, very dark grayish brown, dark yellowish brown, or dark grayish brown (7.5YR 3/4; 10YR 3/2, 3/3, 3/4, 4/2, 4/3, 4/4). It is loam, clay loam or sandy clay loam and may be gravelly, very gravelly, cobbly, very cobbly or extremely cobbly. Clay content increases by three percent from the above horizons. Rock fragments average 35 to 60 percent. Reaction is medium acid to mildly alkaline.

The R horizon is fractured serpentinitic, metamorphic or igneous rock within a depth of 20 inches.

Use and Vegetation: Used primarily for wildlife and watershed. Native vegetation is Jeffrey pine, incense cedar, mountain mahogany, greenleaf and whiteleaf manzanita, bigleaf sagebrush, white fir, Douglas-fir, ponderosa pine, knobcone pine, huckleberry oak, buckbrush, silktassel, Oregon white oak, canyon live oak, bottlebrush squirreltail, berberis, California fescue, western juniper, buckwheat and annual grasses.

HAPLIC DURIXERALFS

Haplic Durixeralfs are shallow, somewhat poorly drained soils that formed in material weathered from glacial outwash and alluvium. These soils occur on volcanic uplands. Slopes range from 0 to 15 percent. The mean annual precipitation is about 20 inches and the mean annual temperature is about 44.o.F. Elevations are 4,400 to 5,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Haplic Durixeralf loam - on a 5 percent south-facing convex slope at 4,850 feet elevation, under big sagebrush, antelope bitterbrush and California fescue. (Colors are for dry soil unless otherwise stated.).

A1-0 to 3 inches; grayish brown (10YR 5/2) loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; 4 percent pebbles and cobbles; neutral (pH 6.7); clear wavy boundary.

A2-3 to 8 inches; brown (10YR 5/3) loam, dark brown (7.5YR 3 /2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; 4 percent pebbles and cobbles; neutral (pH 7.0); gradual irregular boundary.

Bt1-8 to 16 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common moderately thick clay films on ped faces; 5 percent gravel size durinodes; mildly alkaline (pH 7.5); gradual irregular boundary.

C1m-16 to 28 inches; light yellowish brown (10YR 6/4) cemented sandy loam, dark yellowish brown (10YR 4/4) moist; massive; weakly cemented; common moderately thick clay films in cracks and few pores; mildly alkaline (pH 7.5); gradual wavy boundary.

C2m-28 to 35+ inches; light yellowish brown (10YR 6/4) cemented sandy loam, dark yellowish brown (10YR 4/4) moist; massive; weakly to strongly cemented; moderately alkaline (pH 8.0).

Type Location: Goosenest Ranger District, Klamath National Forest; Siskiyou County, California; about 2

1/4 miles southeast of Herd Peak Lookout, 2 miles northeast of Sheep rock, 3 3/4 miles west of Deer Mountain, 1 1/3 miles north of Deer Mountain Lodge in road cut on U.S. Highway 97; SE 1/4 NW 1/4 Section 4, T. 43 N., R. 3 W.

Range in Characteristics: Depth to a duripan is less than 20 inches and depth to bedrock is greater than 40 inches. The mean annual soil temperature is 44 to 48.o.F. The soil between a depth of 6 inches and the top of the duripan is dry from August 1 to October 20 in most years and is moist in some or all parts the rest of the year.

The A horizon is grayish brown, brown, light grayish brown or light brown (10YR 5/2, 5/3, 6/2, 6/3). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2; 7.5YR 3/2). It is a loam or sandy loam with 12 to 18 percent clay and 0 to 10 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

The Bt horizon is pale brown or light yellowish brown (10YR 6/3, 6/4). Moist colors are very dark grayish brown, dark brown, dark grayish brown or dark yellowish brown (10YR 3/2, 3/3, 4/2, 4/4). It is a loam or sandy clay loam with 24 to 29 percent clay and 0 to 12 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

The Cm horizon is light yellowish brown or very pale brown (10YR 6/4, 7/4). Moist colors are dark brown or dark yellowish brown (10YR 4/3, 4/4). It is sandy loam, very cobbly sandy clay loam, very cobbly sandy clay or very cobbly clay with 15 to 45 percent clay and 0 to 60 percent gravel and cobbles. This horizon is massive and weakly to strongly cemented but is not indurated. Cappings of siliceous or calcareous material are found in this horizon in many of the pedons. They appear to be siliceous, but some slightly effervesce in hydrochloric acid. Reaction is neutral to moderately alkaline.

Use and Vegetation: Used primarily for rangeland and wildlife habitat. Native vegetation is big sagebrush, black or low sagebrush, greenleaf manzanita, bitterbrush, fescue, bluegrass, bottlebrush squirreltail, stipa, cheatgrass, figwart, aster, yarrow, larkspur, shooting star, mustard and a few ponderosa pine and juniper.

LITHIC RUPTIC -XEROCHREPTIC HAPLOXERALFS

Lithic Ruptic-Xerochreptic Haploxeralfs are shallow well drained residual soils formed from ultramafic rocks. These soils occur on steep to extremely steep mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 50 to 100 inches and the mean annual temperature is 37 to 57.o.F. Elevations are 1,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Lithic Ruptic-Xerochreptic Haploxeralf loam - on a 75 percent southwest-facing slope at 3,300 feet elevation, under a stand of Jeffrey pine, incense cedar and whiteleaf manzanita. (Colors are for dry soil unless otherwise stated.).

O-1 to 0 inches; loose conifer needles.

A1-0 to 1 inches; reddish brown (5YR 4/4) very gravelly loam, dark reddish brown (5YR 3/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; medium acid (pH 6.0); clear smooth boundary.

Bt1-1 to 6 inches; red (2.5YR 4/6) very gravelly loam, reddish brown (2.5YR 4/4) moist; moderate fine and medium subangular blocky structure; soft, friable, sticky and slightly plastic; common roots; medium acid (pH 6.0); gradual smooth boundary.

Bt2-6 to 11 inches; red (2.5YR 4/6) very gravelly clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common thin clay films on ped faces and in pores; medium acid (pH 6.0); gradual broken boundary.

Bt3-11 to 17 inches; yellowish red (5YR 4/6) very cobbly clay loam, yellowish red (5YR 4/6) moist; weak fine subangular blocky structure; soft, friable, sticky and plastic; few thin clay films on ped faces and in pores; common roots; medium acid (pH 6.0) ; abrupt irregular boundary.

R-17+ inches; hard bedrock.

Type Location.: Oak Knoll District, Klamath National Forest; Siskiyou County, California; Section 20, T. 47 N., R. 11 W.

Range in Characteristics: The soil is 10 to 20 inches deep to hard, fractured bedrock. The mean annual soil temperature is 39 to 59. o.F. The soils are usually dry between the depths of 6 and 14 inches or to the lithic contact from August 1 to October 15, and is moist in some or all parts the rest of the year.

The A horizon is red, reddish brown, yellowish red or strong brown (2.5YR 4/6, 5/4, 5/6; 5YR 4/4, 4/6; 7.5YR 5/6). Moist colors are dark reddish brown, red, reddish brown, or dark brown (2.5YR 3/4, 4/6; 5YR 3/3, 3/4, 4/4; 7.5YR 4/4). It is very to extremely gravelly loam or very to extremely cobbly loam. Rock fragments average 50 to 80 percent. Reaction is medium acid to neutral.

The Bt horizon is reddish brown, red, yellowish brown, yellowish red or strong brown (2.5YR 4/4, 4/6; 5YR 4/6, 5/6, 5/8; 7.5YR 5/6). Moist colors are red, reddish brown, or yellowish red (2.5YR 4/4, 4/6; 5YR 4/4, 4/6, 5/6). It is very to extremely gravelly or cobbly loam or very to extremely gravelly or cobbly clay loam, with a three percent increase in the clay content in most pedons, except where the lithic contact is closest to the soil surface. There are 40 to 80 percent rock fragments. Reaction is medium acid.

The R horizon is hard, slightly fractured peridotite.

Use and Vegetation: Used primarily for watershed, range and wildlife habitat. Native vegetation is Jeffrey pine, incense cedar, Douglas-fir, pinemat manzanita, whiteleaf and greenleaf manzanita, madrone, buckbrush, squaw carpet, California coffeeberry, beargrass, huckleberry oak, silktassel and Idaho fescue.

MOLLIC HAPLOXERALS

Mollic Haploxeralfs are very shallow and shallow somewhat excessively drained soils that formed in residuum from weathered and mixed glacial till. These soils occur on ridges and mountain sideslopes. Slopes range from 30 to 50 percent. The mean annual precipitation is 30 to 50 inches and the mean annual temperature is about 38.o.F. Elevations are 5,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Mollic Haploxeralf gravelly loam - on a 30 percent northwest-facing convex slope at 5,450 feet elevation, under Jeffrey pine, incense cedar, Douglas-fir, white fir, buckbrush, greenleaf manzanita, forbs and grasses. (Colors are for dry soil unless otherwise stated.).

A-0 to 5 inches; dark reddish brown (5YR 3/4) gravelly loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; mildly alkaline (pH 7.6); clear smooth boundary.

Bt1-5 to 9 inches; brown or dark brown (7.5YR 4/4) silty clay loam, brown or dark brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few thin clay films as bridges, in pores and on ped faces; few very fine and fine roots; neutral (pH 7.0); abrupt wavy boundary.

Cm-9 to 20+ inches; weathered till with ultramafic coarse fragments.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; NW 1/4 NE 1/4 Section 26, T. 41 N., R. 7 W.

Range in Characteristics: Depth to an indurated horizon is less than 20 inches. The mean annual soil temperature is 37 to 44.o.F. The soil between the depths of 6 inches and the top of the indurated horizon is dry from August 1 to October 15 in most years, and moist in some or all parts the rest of the year.

The A horizon is dark brown, brown, strong brown or dark reddish brown (7.5 YR 4/4, 4/6; 5YR 3/3, 3/4). Moist colors are dark brown or dark reddish brown (7.5YR 3/2; 5YR 3/3). It is loam or gravelly loam. Rock fragments average 10 to 25 percent. Reaction is mildly alkaline. Base saturation is less than 50 percent.

The Bt horizon is brown or dark brown (7.5YR 3/2, 3/4, 4/2, 4/4). Moist colors are dark reddish brown, dark brown or brown (5YR 3/3; 7.5YR 4/2, 4 /4). It is clay loam or silty clay loam and may be gravelly. Rock fragments average 10 to 25 percent. Reaction is slightly acid to neutral.

The Cm horizon is concrete-like cemented till.

Use and Vegetation: Used mainly for watershed, wildlife habitat and timber production. Native vegetation is perennial grasses, Jeffrey pine, incense cedar, Douglas-fir, white fir, buckbrush and greenleaf manzanita.

ULTIC HAPLOXERALFS

Ultic Haploxeralfs are moderately deep to very deep well-drained residual soils formed from mica schist. These soils occur on moderately steep mountain sideslopes and landslide benches. Slopes range from 15 to 30 percent. Mean annual precipitation is 55 to 70 inches and the mean annual temperature is about 39.o.F. Elevations are 4,800 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Ultic Haploxeralf gravelly loam - on a 25 percent southwest-facing slope at 5,440 feet elevation, under a cover of mixed conifer, shrubs, grasses and forbs. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; scattered conifer needles and dried forbs and grasses.

A-0 to 2 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (7.5YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 30 percent pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

Bt1-2 to 11 inches; brown (7.5YR 5/4) gravelly loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; soft, friable, nonsticky and slightly plastic; many thin clay films on ped faces and in pores; few very fine, fine, and common coarse roots; 25 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

Bt2-11 to 18 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate fine to medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common thin clay films on ped faces and in pores; few very fine and fine roots; 35 percent pebbles and 10 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

Bt3-18 to 35 inches; yellowish brown (10YR 5/4) extremely cobbly loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common thin clay films on ped faces and in pores, and few thin clay films as bridges; few very fine roots; 40 percent pebbles and 40 percent cobbles; slightly acid (pH 6.5); gradual wavy boundary.

R-35+ inches; highly fractured mica schist, breaking off in plates.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NE 1/4 NW 1/4 Section 25, T. 47 N., R. 10 W.

Range in Characteristics: Depth to a lithic contact is 20 to 60 inches. The mean annual soil temperature is 36 to 46.o.F. The soils are usually dry between the depths of 8 and 24 inches from August 1 to October 15 in most years, and are moist in some or all parts the remainder of the year.

The A horizon is brown, very dark gray, dark grayish brown, or yellowish brown (7.5YR 4/4; 10YR 3/1, 4/2, 4/3, 5/3, 5/4). Moist colors are dark brown, black, very dark brown, or very dark grayish brown (7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 2/1, 2/2, 3/2). Dark colors do not meet mollic criteria because the argillic horizon has a base saturation of less than 75 percent throughout the upper 30 inches. It is loam, gravelly loam, very gravelly loam or cobbly loam. Rock fragments average 5 to 35 percent gravel and 5 to 25 percent cobbles. Reaction is very strongly acid to neutral.

The Bt horizon is strong brown, brown, reddish yellow, yellowish brown, pale brown, light yellowish brown or pale olive (7.5YR 4/6, 5/4, 5/6, 6/6; 10YR 5/3, 5/4, 6/3, 6/4; 2.5Y 6/4; 5Y 6/3). Moist colors are reddish brown, dark brown, strong brown, dark grayish brown, dark yellowish brown, yellowish brown, olive brown, olive or olive gray (5 YR 4/4; 7.5YR 3/4, 4/4, 4/6; 10YR 3/3, 4/2, 4/3, 4/4, 5/4; 2.5Y 4/2, 4/4; 5Y 4/3, 5/2, 5/3). It is loam or clay loam. Rock fragments average 10 to 75 percent gravel and 5 to 40 percent cobbles. Reaction is very strongly to slightly acid.

The C horizon may be present in some pedons.

The R horizon is a highly fractured and foliated mica schist rock.

Use and Vegetation: Used mainly for timber production, range, wildlife habitat and watershed. Native vegetation is white fir, red fir, incense cedar, Douglas-fir, currant, willow, snowberry, chinquapin, lupine, pen stemon, pussy paws, vetch, annual and perennial grasses.

LITHIC XERORTHENTS, COLD

Lithic Xerorthents, cold, are very shallow or shallow excessively drained soils that formed in residuum from weathered ultramafic rocks. These soils occur on steep to extremely steep mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 50 to 90 inches and the mean annual temperature is about 38.o.F. Elevations are 5,000 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Xerorthent, cold gravelly loamy sand - on a 57 percent southeast-facing slope at 5,600 feet elevation, under Jeffrey pine, incense cedar, western white pine, huckleberry oak, California coffeeberry, purple reedgrass, basin wildrye and forbs. (Colors are for dry soil unless otherwise stated.).

A-0 to 3 inches; brown or dark brown (7.5YR 4/4) gravelly loamy sand, brown or dark brown (7.5YR 4/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common roots; 45 percent pebbles; neutral (pH 6.7); clear wavy boundary.

B-3 to 9 inches; strong brown (7.5YR 5/6) very gravelly loamy sand, brown (7.5YR 5/4) moist ; massive; soft, very friable, slightly sticky and nonplastic; common roots; 55 percent pebbles; neutral (pH 6/6); abrupt irregular boundary.

R-9+ inches; hard ultramafic rock.

Type Location: Oak Knoll District, Klamath National

Forest; Siskiyou County, California; NE 1/4 SE 1/4 Section 7, T. 47 N., R. 11 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 35 to 46.o.F. The soil between 8 and 14 inches or at the lithic contact is dry from August 1 to October 15 in most years and moist in some or all parts the rest of the year.

The A horizon is brown, dark brown or strong brown (7.5YR 4/2, 4/4, 4/6). Moist colors are dark brown, brown, dark grayish brown or dark yellowish brown (7.5YR 4/ 2, 4/4; 10YR 4/2, 4/3, 4/4). It is gravelly or very gravelly loamy sand. Rock fragments average 15 to 40 percent. Reaction is slightly acid to neutral.

The B horizon is brown, strong brown or yellowish brown (7.5YR 5/4, 5/6; 10YR 5/4). Moist colors are dark brown, brown, dark yellowish brown or yellowish brown (7. 5YR 4/4, 5/4; 10YR 4/3, 4/4, 5/4). Colors do not meet requirements for a cambic horizon. It is very gravelly or extremely gravelly loamy sand. Rock fragments average 40 to 75 percent. Reaction is slightly acid to neutral.

The R horizon is hard, fractured dunite bedrock.

Use and Vegetation: Use is mainly watershed, range and wildlife habitat. Native vegetation is Jeffrey pine, incense cedar, western white pine, huckleberry oak, California coffeeberry, purple reedgrass, buckwheat, phlox, beargrass, basin wildrye and forbs.

LITHIC XERORTHENTS, GRANITIC

Lithic Xerorthents, granitic, are shallow, excessively drained residual soils formed from granitic rock. They occur on mountain sides lopes. Slopes range from 50 to 90 percent slopes. Mean annual precipitation is 40 to 60 inches and the mean annual temperature is about 51.o.F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Typical Pedon: Lithic Xerorthent, granitic sandy loam - on a 70 percent south-facing slope at 1,900 feet elevation, under a live oak and mixed conifer stand. (Colors are for dry soil unless otherwise stated.).

O-1 to 0 inches; loose broad leaves.

A-0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; massive; friable, slightly sticky and nonplastic ; few fine and very fine roots; medium acid (pH 5.9); clear smooth boundary.

C-3 to 7 inches; pale brown (10YR 6/3) sandy loam ,yellowish brown (10YR 5/4) moist; massive; friable, slightly sticky and nonplastic; common roots; medium acid (pH 5.9); abrupt irregular boundary.

R-7+ inches; hard granitic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; 1.0 mile east of

Seiad Valley Post Office; Section 12, T. 46 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 59.o.F. The soil between 10 and 16 inches or at the lithic contact is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year.

The A horizon is grayish brown, brown, yellowish brown or light olive brown (10YR 5/2, 5/3, 5/4; 2.5Y 5/2, 5/4). Moist colors are dark brown, dark yellowish brown or olive brown (10YR 3/3, 3/4, 4/3; 2.5Y 4/4). It is loam, sandy loam or loamy fine sand. There are 10 to 30 percent gravels. Reaction is medium acid to neutral.

The C horizon is pale brown, light yellowish brown, very pale brown, light brownish gray or light gray (10YR 6/3, 6 /4, 7/3, 7/4; 2.5Y 5/2, 7/2). Moist colors are brown, yellowish brown or light olive brown (10YR 5/3, 5/4; 2.5Y 5/4). It is sandy loam, loamy fine sand or loamy sand. There are 10 to 30 percent gravels. Reaction is medium acid to neutral.

The R horizon is hard fractured granitic bedrock.

Use and Vegetation: Use is primarily for watershed and wildlife habitat. Native vegetation is canyon live oak, madrone, white leaf manzanita, poison oak, Douglas-fir, ponderosa pine and sugar pine.

LITHIC XEROR THENTS, ULTRAMAFIC

Lithic Xerorthents, ultramafic, are very shallow and shallow well drained soils that formed in residuum from serpentinitic rock. These soils occur on mountain sideslopes and ridgetops. Slopes range from 30 to 70 percent. Mean annual precipitation is 50 to 100 inches and mean annual temperature is about 51.0. F. The elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Typical Pedon: Lithic Xerorthents, ultramafic gravelly loam - on a 55 percent convex south-facing slope at 4,700 feet elevation, under Jeffrey pine, incense cedar, huckleberry oak, California coffeeberry and pinemat manzanita. (Colors are for dry soil unless otherwise stated.).

C1-0 to 2 inches; light brownish gray (2.5Y 6/2) gravelly loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few roots; neutral (pH 6.9); abrupt smooth boundary.

C2-2 to 9 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few roots; neutral (pH 7.1); abrupt irregular boundary.

R-9+ inches; hard, fractured serpentinitic rock.

Type Location: Ukonom District, Klamath National Forest; Siskiyou County, California; SE 1/4 NE 1/4 Section 35, T. 14 N., R. 4 E.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 59.0.F. The soil between the depth of 8 to 20 inches or at the lithic contact is dry in all parts from mid-July to mid-October, and moist in some or all parts the rest of the year.

The C1 horizon is light gray or light brownish gray (2.5Y 6/1, 6/2). Moist colors are dark gray or dark grayish brown (2.5Y 4/1, 4/2). It is gravelly loam or very gravelly loam. Rock fragments average 20 to 40 percent. Reaction is neutral.

The C2 horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is very gravelly loam or extremely gravelly loam. Rock fragments average 40 to 70 percent. Reaction is neutral.

The R horizon is hard, fractured serpentinitic bedrock.

Use and Vegetation: Used mainly for watershed and wildlife habitat. Native vegetation is Jeffrey pine, incense cedar, sugar pine, huckleberry oak, California coffeeberry, pinemat manzanita, beargrass, grasses and forbs.

ENTIC XERUMBREPTS

Entic Xerumbrepts are shallow, well to excessively drained residual soils formed in material weathered from granitic rocks. They occur on upper mountain sideslopes and ridges. Slopes range from 30 to 90 percent. Mean annual precipitation is 35 to 100 inches and the mean annual temperature is about 52.o.F. Elevations are 1,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Entic Xerumbrept gravelly loam - on a 50 percent southwest-facing slope at 4,600 feet elevation, under a mixed conifer-shrub cover. (Colors are for dry soil unless otherwise stated.).

A-0 to 5 inches; grayish brown (10YR 5/ 2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; strongly acid (pH 5.3); clear smooth boundary.

AC- 5 to 14 inches; pale brown (10YR 6/3) gravelly loamy sand, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; medium acid (pH 6.0); abrupt wavy boundary.

Cr-14+ inches; light yellowish brown (10YR 6/4) coarse sand, yellowish brown (10YR 5/4) moist; massive; hard, firm, nonsticky and nonplastic; medium acid (pH 6.0).

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NE 1/4 SW 1/4 Section 33, T. 40 S., R. 1 E.

Range in Characteristics: Depth to a paralithic contact is less than 20 inches. Mean annual soil temperature is 39 to 59.o.F. The soil between the depths of 10 and 20 inches or at the paralithic contact is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown, dark grayish brown, grayish brown, brown or yellowish brown (10YR 3/2, 4/2, 5/2, 5/3, 5/4). Moist colors are black, very dark gray, very dark grayish brown or dark brown (10YR 2/1, 3/1, 3/2, 3/3). It is a loam, sandy loam or loamy sand, and may be gravelly. Rock fragments average 5 to 30 percent. Reaction is medium to strongly acid.

The C horizon, if present, is dark brown, brown or light yellowish brown (10YR 4/3, 6/4). Moist colors are very dark grayish brown, brown or dark brown (10YR 3/2, 4/3). It is gravelly loamy sand or loams and with less than 20 percent clay and 10 to 30 percent rock fragments. Reaction is medium acid.

The Cr horizon is soft, weathered granite. Dry colors are light yellowish brown, brownish yellow, very pale brown or yellow (10YR 6/4, 6/6, 7/4, 7/6). Moist colors are yellowish brown, light yellowish brown or brownish yellow (10YR 5/4, 5/6, 6/4, 6/6). The bedrock breaks down to coarse or very coarse sand.

Use and Vegetation: Used for water shed, wildlife and some timber production. Native vegetation is white fir, incense cedar, ponderosa pine, Douglas-fir, black oak, greenleaf manzanita, bush chinquapin, bittercherry, huckleberry oak and snowbrush.

LITHIC CRYOBOROLLS

Lithic Cryoborolls are shallow, somewhat excessively drained residual soils formed in material weathered from serpentinitic and ultramafic rocks. They occur on mountain sideslopes and cirque sidewalls. Slopes range from 30 to 70 percent. Mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 42.o.F. Elevations are 6,200 to 8,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Cryoboroll very gravelly loam - on a 60 percent northeast-facing slope at 6,240 feet elevation, under a cover of red fir, western white pine and forbs. (Colors are for dry soil unless otherwise stated).

O-1/2 to 0 inches; scattered conifer needles and broad leaves.

A1-0 to 5 inches; brown (10YR 5/3) very gravelly loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and common medium and coarse roots; many very fine and fine interstitial pores; strongly acid (pH 5.5); clear smooth boundary.

A2-5 to 10 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine and common fine and medium roots; common very fine and fine interstitial pores; medium acid (pH 6.0); abrupt smooth boundary.

C-10 to 18 inches; yellowish brown (10YR 5/4) very gravelly fine sandy loam, brown (7.5YR 4/2) moist; massive; loose, loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; medium acid (pH 6.0); abrupt irregular boundary.

R-18+inches; hard serpentinitic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; Kangaroo Lake; SW 1/4 NE 1/ 4 Section 14, T. 40 N., R. 7 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 32 to 46.o.F, and mean summer soil temperature is 40 to 47.o.F. The soil between the depths of 8 and 14 inches, or at the lithic contact is dry in all parts from August 10 to October 10, and moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the soil as a result of the ultrabasic parent material.

The A horizon is grayish brown, brown, or yellowish brown (10YR 4/3, 5/2, 5/3, 5/4). Moist colors are dark brown, very dark brown or very dark grayish brown (7.5YR 3/2; 10YR 2/2, 3/2, 3/3). The soil is gravelly or very gravelly loam or sandy loam. In some pedons, the A horizon lies directly over the hard bedrock. In others, a C horizon separates the A from the lithic contact. Rock fragments average 20 to 40 percent gravels and 10 to 25 percent cobbles. Reaction is medium to strongly acid.

The C horizon is brown, light brown, yellowish brown or light yellowish brown (7.5YR 5/4, 6/4; 10YR 5/4, 6/4). Moist colors are dark brown, brown or dark yellowish brown (7.5YR 3/4, 4/2, 4/4; 10YR 3/4, 4/3, 4/4). It is very gravelly or very cobbly sandy loam, fine sandy loam or loam. Rock fragments average 35 to 50 percent gravels and 20 to 30 percent cobbles. Reaction is medium to strongly acid.

The R horizon is hard, slightly fractured serpentinitized peridotite.

Use and Vegetation: Used for wildlife habitat, watershed and some timber production. Native vegetation is red fir, Jeffrey pine, western white pine, beargrass, phlox, buckwheat and perennial bunchgrass.

LITHIC ARGIXEROLLS

Lithic Argixerolls are shallow, somewhat excessively drained residual soils formed from serpentinitic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. Mean annual precipitation is 45 to 60 inches and the mean annual temperature is about 42.o.F. The elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Argixeroll very gravelly sandy clay loam - on a 40 percent northeast-facing linear slope at 6,640 feet elevation, under a cover of 5 percent forbs and grasses. (Colors are for dry soil unless otherwise stated.).

Surface is paved with gravels and cobbles.

A-0 to 5 inches; brown (7.5 YR 5/2) very gravelly sandy clay loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 50 percent pebbles and 1 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 11 inches; brown (7.5YR 5/4) very gravelly silty clay loam, dark brown (7.5YR 3/4) moist; weak to moderate fine subangular blocky structure; soft, very friable, slightly sticky and plastic; common very fine and fine roots; common moderately thick clay films on ped faces, in pores and as bridges; 40 percent pebbles and 2 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.

Cr-11 to 14 inches; soft, weathered serpentinite; abrupt smooth boundary.

R-14+ inches; hard, highly fractured serpentinite.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; near Rock Fence Lake; S E 1/4 SE 1/4 Section 12, T. 40 N., R. 7 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. The mean annual soil temperature is 35 to 46.o.F. The soil between the depths of 8 and 18 inches or the lithic contact is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the soil as a result of the serpentinitic parent material.

The A horizon is brown, strong brown, dark grayish brown, dark yellowish brown or yellowish brown (7.5YR 5/2, 5/4, 5/6; 10YR 4/2, 4/3, 4/4, 5/3, 5/4). Moist colors are dark brown and very dark grayish brown (7.5YR 3/2, 3/4; 10YR 3/3, 3/2). It is very gravelly or gravelly loam, sandy loam or sandy clay loam. Rock fragments average 40 to 60 percent. Reaction is slightly acid to mildly alkaline.

The B horizon is yellowish brown or brown (10YR 5/4; 7.5YR 5/4). Moist colors are dark brown (10YR 3/3; 7.5YR 3/4). It is very gravelly silty clay loam or very gravelly clay loam. Rock fragments average 35 percent or more. Reaction is slightly acid to mildly alkaline.

A paralithic contact may or may not be present. The lithic contact is hard, fractured metamorphic or serpentinitic bedrock.

Use and Vegetation: Used for wildlife habitat and watershed. Native vegetation is a few Jeffrey pine, western white pine, buckwheat, phlox and annual grass.

TYPIC HAPLOXEROLLS

Typic Haploxe rolls are moderately deep, well drained soils that formed in material weathered from marble and schist. These soils occur on mountain sideslopes and colluvial footslopes. Slopes Range from 30 to 70 percent. The mean annual precipitation is about 40 to 80 inches and the mean annual temperature is about 51.o.F. The elevations are 1,200 to 7,000 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Typic Haploxeroll gravelly loam - on a 70 percent west-facing slope at 4,300 feet elevation, under a cover of Douglas-fir, white fir, incense cedar, huckleberry oak, coffeeberry, snowberry and other shrubs and forbs. (Colors are for dry soil unless otherwise stated.).

O-2 to 0 inches; weakly matted conifer needles.

A1-0 to 1 inch; brown (10YR 4/3) gravelly loam, very dark brown (10YR 2/2) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; neutral (pH 6.9); slightly effervescent; abrupt smooth boundary.

A2-1 to 5 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 3/3) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; plentiful roots; neutral (pH 6.8); slightly effervescent; clear smooth boundary.

A3-5 to 13 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (7.5YR 3/2) moist; very weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common roots; neutral (pH 7.0); strongly effervescent; diffuse boundary.

Bw1-13 to 24 inches; yellowish brown (10YR 5/6) very gravelly loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common roots; mildly alkaline (pH 7.5); strongly effervescent; gradual wavy boundary.

Bw2-24 to 30 inches; brownish yellow (10YR 6/6) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable,

slightly sticky and slightly plastic; common roots; lime on stones; mildly alkaline (pH 7.5); strongly effervescent; abrupt irregular boundary.

R-30+ inches; hard fractured schist.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; about 4 1/4 miles west of Tyler Meadows, 2 1/2 miles north of Buckhorn Mountain in the Grider Creek drainage; NE 1/4 NW 1/4 Section 32, T. 45 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is 20 to 40 inches. The mollic epipedon is 10 to 19 inches thick. The base saturation is greater than 75 percent throughout the upper 30 inches of soil. The mean annual soil temperature is 36 to 59.o.F. The soil between a depth of 7 and 21 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the soil as a result of the parent material.

The A horizon is brown or yellowish brown (10YR 4/3, 5/3, 5/4). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is a loam, gravelly loam or very gravelly loam with 10 to 60 percent rock fragments. Reaction is neutral.

The Bw horizon is yellowish brown, light yellowish brown and brownish yellow (10Y R 5/4, 5/6, 6/4, 6/6). Moist colors are brown and dark yellowish brown (7.5YR 4/4; 10YR 4/3, 4/4). It is a very gravelly to extremely gravelly loam with 35 to 80 percent rock fragments. Reaction is neutral to mildly alkaline.

The R horizon is hard fractured schist or consolidated marble.

Use and Vegetation: Used for timber production, watershed and wildlife habitat. Native vegetation is Douglas-fir, incense cedar, Pacific yew, white fir, red fir, mountain hemlock, pinemat manzanita, sadler oak, huckleberry oak, bigleaf maple, coffeeberry, snowberry, hazelnut, thimbleberry, wildrose, currant, penstemon, Indian paintbrush, forbs and grasses.

LITHIC HAPLOXEROLLS

Lithic Haploxerolls are very shallow and shallow somewhat excessively drained residual soils that formed from weathered marble, schist, metasedimentary, serpentinic, and ultramafic rocks. They occur on mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 40 to 70 inches and the mean annual temperature is about 51.o.F. Elevations are 1,200 to 5,000 feet. The climate is mediteranean, with warm dry summers and cool moist winters.

Typical Pedon: Lithic Haploxeroll loam - on a 60 percent south-facing slope at 3,300 feet elevation, under a cover of mixed conifers, hardwoods and shrubs. (Colors are for dry soil unless otherwise stated).

0-2 to 0 inches; loose fresh broad leaves.

A1-0 to 2 inches; brown (10YR 4/3) loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; many roots; effervescent; slightly acid (pH 6.3); clear wavy boundary.

A2-2 to 7 inches; dark yellowish brown (10YR 4/4) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; effervescent; neutral (pH 7.0); abrupt irregular boundary.

R-7+ inches; hard light gray marble.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NE 1/4 SE 1/4 Section 33, T. 46 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 59.o.F. The soil between the depths of 6 inches and the lithic contact is dry in all parts from July 15 to October 20 in most years and is moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the profile.

The A horizon is dark grayish brown, brown, dark yellowish brown, grayish brown or yellowish brown (10YR 4/2, 4/3, 4/4, 5/2, 5/3, 5 /4). Moist colors are dark brown, black, very dark brown, very dark grayish brown or dark brown (7.5YR 3/2; 10YR 2/1, 2/2, 3/2, 3/3). The soil is loam or sandy loam and may be gravelly or very gravelly. Rock fragments average 10 to 50 percent gravels. Reaction is slightly acid to neutral.

The B horizon, if present, is brown, dark yellowish brown or yellowish brown (7.5YR 4/4; 10YR 4/4, 5/3, 5/4). Moist colors are dark brown or very dark grayish brown (7.5YR 3/2; 10YR 3/2, 3/3). The soil is sandy loam, loam or clay loam and may be gravelly or very gravelly. Rock fragments average 10 to 75 percent gravels and less than 5 percent cobbles. Reaction is slightly acid to neutral.

The R horizon is hard, fractured metamorphic or ultramafic rock.

Use and Vegetation: Used for watershed, wildlife habitat, range and some timber production. Native vegetation is canyon live oak, madrone, black oak, Douglas-fir, incense cedar, sugar pine, poison oak, whiteleaf manzanita, western mountain mahogany and annual grasses.

LITHIC XERUMBREPTS

Lithic Xerumbrepts are shallow, excessively drained residual soils that formed in material weathered from acid igneous rocks. They occur on mountain sideslopes. Slopes range from 15 to 90 percent. Mean annual precipitation is 50 to 100 inches and the mean annual temperature is about 42.o.F. Elevations are 4,800 to 6,800 feet. The climate is mediteranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Xerumbrept gravelly sandy loam - on a 36 percent complex northeast-facing slope at 5,200 feet elevation, under a cover of white fir, incense cedar, pinemat manzanita, huckleberry oak and forbs. (Colors are for dry soil unless otherwise stated.)

A-0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam, black (10YR 2/1) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; many very fine interstitial pores; medium acid (pH 5.6); clear smooth boundary.

C-6 to 11 inches; brown (10YR 5/3) very gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine interstitial and vesicular pores; medium acid (pH 5.6); abrupt irregular boundary.

R-11 inches; weathered igneous rock.

Type Location: Happy Camp District, Klamath

National Forest; Siskiyou County, California; 1/4 mile west of Bear Peak; SE 1/4 SW 1/4 Section 14, T. 15 N., R. 5 W.

Range in Characteristics: Depth to a lithic contact is between 10 and 20 inches. Mean annual soil temperature is 35 to 46.o. F. The soil between the depths of 10 inches and the lithic contact is dry from August 1 to October 15 in most years, and is moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown or dark grayish brown (10YR 3/2, 4/2). Moist colors are black or very dark brown (10YR 2/1, 2/2). It is sandy loam or loamy sand with 20 to 40 percent coarse fragments. Reaction is medium to strongly acid. Base saturation is less than 50 percent throughout the epipedon.

The C horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is very gravelly loamy sand with 35 to 50 percent coarse fragments. Reaction is medium to strongly acid.

The R horizon is hard weathered igneous rock.

Use and Vegetation: Used for watershed, wildlife habitat and some timber production. Native vegetation is white fir, ponderosa pine, incense cedar, greenleaf manzanita, pinemat manzanita, thinleaf huckleberry, huckleberry oak, phlox, sunflower, pink family, Adders tongue, stonecrop and other forbs.

References

1. Alexander, E. B. 1981. Seedling Survival. U.S.D.A.-F.S. Region 5 Publication.
2. Asphalt Institute. 1969. Soil Manual for Design of Asphalt Pavement Structures. Manual Series No. 10 (MS-10). College Park, Maryland.
3. Baily, E.H., Editor. 1966 Geology of Northern California, Bulletin 190. California Division of Mines and Geology, California Department of Conservation.
4. Barbour, Michael G. and Major, Jack. 1977. Terrestrial Vegetation of California. Wiley and Sons, New York, New York. 1002 pp.
5. Buol, S.W., Hole, F.D., McCracken, R.J. 1973. Soil Genesis and Classification. Iowa State University Press, Ames, Iowa.
6. California Division of Mines and Geology. 1964. Weed Sheet. California Department of Conservation.
7. Hausenbueller, R.L. 1972. Soil Science Principles and Practices. Wm. C. Brown Co. Publishers, Dubuque, Iowa.
8. Munz, P.A. 1959. A California Flora. University of California Press, Berkeley, California.
9. Newlun, J. 1968. Soil Temperatures for Siskiyou County. U.S.D.A. Soil Conservation Service.
10. Parsons, A., Knox, E.G. 1980. Soils of the Six Rivers National Forest, Eureka, California. Soil and Land Use Technology, Inc., Columbia, Maryland.
11. Retalas, J.G. 1980 Order 3 Soil Resource Inventory of San Bernardino National Forest. U.S.D.A. Forest Service.
12. Soil Survey Staff. 1951. Soil Survey Manual. U.S.D.A. Soil Conservation Service, Handbook 18. Superintendent of Documents, U.S.G.P.O., Washington, D.C.
13. Soil Survey Staff. 1975. Soil Taxonomy. U.S.D.A. Soil Conservation Service, Handbook 436. Superintendent of Documents, U.S.G.P.O., Washington, D.C.
14. Soil Survey Staff. 1974-1980. National Soils Handbook (drafts). U.S.D.A. Soil Conservation Service, Washington, D.C.
15. Thomas, Jack W. 1979. Wildlife Habitats in Managed Forests, The Blue Mountains of Oregon and Washington. U.S.D.A.-F.S.. Agriculture Handbook No. 553. 510 pp.
16. U.S.D.A. Soil Conservation Service. 1971. A Guide to Engineering Uses of Soils. U.S.D.A. Soil Conservation Service, Attachment, Soils Memo No. 45 (Rev. 2).
17. U.S.D.A. Forest Service. 1976. Soil Survey Procedures Handbook. Region 5 Supplement. San Francisco, California.
18. U.S.D.A. Forest Service. 1981. CALVEG - A Classification of Californian Vegetation. Regional Ecology Group, USFS, 630 Sansome St., San Francisco, California. 168 pp.
19. United States Weather Bureau. 1976. The Climate of Siskiyou County. Farm Advisor's Office of Siskiyou County, California, University of California Extension.
20. Wischmeier, W. H. and D. D. Smith. 1978. Predicting rainfall erosion losses - a guide to conservation planning. U.S. Dept. of Agriculture, Agriculture Handbook No. 537.

Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Basin. A broad structural lowland, commonly elongated and many miles across between mountain ranges.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Cation-exchange capacity (CEC). The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of soil aggregates or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Cobble. Mineral fragments from 3 to 10 inches in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Color, soil. This is determined by the Munsell color charts, and consists of hue, value, and chroma. Hue

is the dominant spectral (rainbow) color. Value refers to the relative lightness of the color, and chroma is the relative purity or strength of the spectral color. For the soil color 10YR 3/2, 10YR is the hue, 3 is the value, and 2 is the chroma.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose. Noncoherent when dry or moist; does not hold together in a mass.

Friable. When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm. When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic. When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky. When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard. When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft. When dry, breaks into powder or individual grains under very slight pressure.

Cemented. Hard; little affected by moistening.

Consociation. A mapping unit in which only one kind of soil or miscellaneous area dominates each delineation. Three-fourths or more of the soils present fit the named soil, or are similar soils. Contrasting inclusions may not exceed 15%. (For example, 166 or 138).

Dump. Dumps are areas of smooth or uneven accumulations or piles of waste rock and general refuse. They are located primarily on floodplains of major rivers or streams in the survey area.

Eolian (Aeolian). As applied to soils, those soils formed from deposits of fine sands and silts which have been transported by the wind. This includes materials from volcanic ejections.

Epipedon. A soil horizon that forms at the surface.

Erosion. The wearing away of the land surface by running water, wind, ice or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. *Synonym:* natural erosion.

Erosion (accelerated). Erosion much more rapid than geological erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature; for example, fire, that exposes a bare surface.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Glacial. As applied to soils, those soils formed from materials deposited from glaciers.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Grus. An accumulation of angular coarse-grained fragments resulting from the granular disintegration of crystalline rocks (esp. granite).

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O Horizon. An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A Horizon. The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

B Horizon. The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C Horizon. The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum, the Arabic number 2 precedes the letter C.

R Layer. Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or B horizon.

Igneous rock. Rocks formed by solidification of hot magma. The coarse-textured intrusive igneous rocks (the granitic type) cooled below the earth's surface. The fine-textured extrusive igneous rocks (andesite, basalt) cooled above the earth's surface.

Inclusion. Soils present within mapping units which differ from the named component(s). They may be very similar or dissimilar from the named components.

Lacustrine. As applied to soils, those soils formed from lake sediments.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition or structure by heat, pressure and movement. Nearly all such rocks are crystalline.

Parent Material. The unconsolidated and more or less chemically weathered mineral or organic matter from which the solum of soil is developed by pedogenic processes.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from

about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Phase, soil. A subdivision of a soil family, subgroup or other unit in the soil classification system based on differences in the soil that affect its management. The differences are too small, however, to justify separate taxonomic units. The phases used in this survey are based on differences in rock fragments, parent material, climate or depth.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as:

Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, gravel, cobbles, stones and boulders.

Runoff. That portion of the precipitation on an area which is discharged from the area through stream channels. That which is lost without entering the soil is called surface runoff and that which enters the soil before reaching the stream is called ground-water runoff or seepage flow from groundwater.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermedi-

ate types. Some wind-deposited sand is consolidated into sandstone.

Serpentinite. A rock consisting almost entirely of serpentine minerals derived from the alteration of previously existing olivine and pyroxene minerals.

Shot. Rounded particles 1 to 2 millimeters in size composed of iron oxide or gibbsite that resembles shotgun pellets.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stone. Rock fragments greater than 10 inches and less than 24 inches in diameter.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are: platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular) and granular (spheroidal). Structureless soils are either single grained (each

grain by itself, as in dune sand), or massive (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam,

silty clay loam, sandy clay, silty clay and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse", "fine", or "very fine".

Ultramafic (or Ultrabasic) rocks. Igneous rocks containing less than 45% silica; containing virtually no quartz or feldspar and composed essentially of iron-magnesian silicates, metal oxides and sulfides and native metals, or of all three.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

TABLE 5. - Map Unit Legend, Area and Proportionate Extent

Map Symbol	Map Unit Name	Acres	Percent
101	Aiken family, 15 to 50 percent slopes	3,336	0.2
102	Aiken family - Dumps, mine tailings association, 2 to 30 percent slopes	1,557	0.1
103	Avis-Oosen families complex, 15 to 50 percent slopes	27,488	1.6
104	Belzar - Wintoner, pumice overburden families complex, 2 to 15 percent slopes	19,901	1.1
105	Belzar- Wintoner, pumice overburden families complex, 15 to 50 percent slopes	17,706	1.0
106	Bluesprin family - Lithic Mollic Haploxeralfs association, 30 to 70 percent slopes	14,214	0.8
107	Buell family, 2 to 30 percent slopes	5,281	0.3
108	Cinder lands	3,540	0.2
109	Clallam family, deep, 15 to 70 percent slopes	21,635	1.2
110	Clallam family, very deep 9 to 70 percent slopes	8,558	0.5
111	Clallam family, deep - very deep association , 2 to 50 percent slopes	4,918	0.3
112	Clallam, deep - Deadwood families association, 50 to 90 percent slopes	164,897	9.3
113	Clallam, deep - Holland families association, 30 to 70 percent slopes	66,858	3.8
114	Clallam, deep - Goldridge, gravelly families association, 30 to 90 percent slopes	58,239	3.3
115	Clallam family, very deep - Riverwash association, 0 to 15 percent slopes	7,241	0.4
116	Coboc - Holland families association, 2 to 15 percent slopes	2,434	0.1
117	Deadfall family - Lithic Cryoborolls association, 30 to 70 percent slopes	10,150	0.6
118	Deadwood - Clallam, deep families association, 50 to 90 percent slopes	127,358	7.1

Map Symbol	Map Unit Name	Acres	Percent
119	Deadwood family - Rock outcrop association, 50 to 90 percent slopes	34,821	2.0
120	Deetz family, 2 to 15 percent slopes	881	0.0
121	De Masters - Smarts families association, 9 to 50 percent slopes	14,823	0.8
122	Dubakella family, 30 to 70 percent slopes	12,860	0.7
123	Endlich - Buell families association, 15 to 70 percent slopes	8,446	0.5
124	Entic Xerumbrepts - Gerle family association, 30 to 90 percent slopes	26,416	1.5
125	Entic Xerumbrepts - Gerle family - Tallac family association, 15 to 50 percent slopes	15,244	0.9
126	Etchen - Neuske families complex, 9 to 30 percent slopes	7,559	0.4
127	Gerle family - Entic Xerumbrepts association, 50 to 90 percent slopes	34,600	2.0
128	Gilligan - Chawanakee families association, 30 to 90 percent slopes	45,355	2.6
129	Gilligan - Goldridge families association, 30 to 90 percent slopes	55,954	3.2
130	Gilligan - Holland families association, 15 to 70 percent slopes	16,912	1.0
131	Goldridge family, gravelly, 15 to 50 percent slopes	6,393	0.4
132	Goldridge, gravelly - Clallam, deep - Prather families association, 30 to 90 percent slopes	7,965	0.5
133	Goldridge - Gilligan families association, 15 to 90 percent slopes	2,387	0.1
134	Guemes family, 30 to 90 percent slopes	6,825	0.4
135	Haplic Durixeralfs, 0 to 5 percent slopes	1,053	0.1
136	Haplic Durixeralfs - Morical family association, 2 to 15 percent slopes	599	0.0

Map Symbol	Map Unit Name	Acres	Percent
137	Helvetia family, 15 to 50 percent slopes	1,732	0.1
138	Holland family, 15 to 50 percent slopes	3,884	0.2
139	Holland - Aiken families association, 2 to 15 percent slopes	2,809	0.2
140	Holland - Aiken - Clallam, deep families complex, 15 to 70 percent slopes	2,839	0.2
141	Holland - Clallam, deep - Coboc families association, 15 to 70 percent slopes	48,077	2.7
142	Holland - Gilligan families association, 30 to 90 percent slopes	18,612	1.1
143	Holland - Skalan families association, 15 to 30 percent slopes	22,397	1.3
144	Holland - Skalan families association, 30 to 70 percent slopes	40,518	2.3
145	Inville family, 15 to 50 percent slopes	10,928	0.6
146	Inville - Wintoner families complex, 2 to 15 percent slopes	26,230	1.5
147	Inville - Wintoner families association, 30 to 50 percent slopes	8,961	1.5
148	Jayar family, 30 to 70 percent slopes	4,921	1.3
149	Jayar family - Lithic Mollic Haploxerafls association, 30 to 70 percent slopes	843	1.0
150	Jayar - Woodseye families association, 30 to 70 percent slopes	73,639	4.1
151	Kang - Beaughton families association, 9 to 90 percent slopes	11,381	0.6
152	Lava flows	2,972	0.2
153	Lithic Haploxerafls - Holland family association, 30 to 70 percent slopes	14,129	0.8
154	Lithic Mollic Haploxerafls - Bluesprin family association, 30 to 90 percent slopes	1,872	0.1

Map Symbol	Map Unit Name	Acres	Percent
155	Lithic Mollic Haploxerafls - Dubakella family association, 15 to 70 percent slopes	8,418	0.5
156	Lithic Mollic Haploxerafls - Rock outcrop complex, 30 to 70 percent slopes	1,071	0.1
157	Lithic Ruptic-Xerochreptic Haploxerafls - Olete family association, 30 to 90 percent slopes	31,415	1.8
158	Lithic Ruptic-Xerochreptic Haploxerafls - Parks family association, 30 to 90 percent slopes	5,028	0.3
159	Lithic Xerorthents, cold - Rock outcrop complex, 30 to 90 percent slopes	1,472	0.1
160	Lithic Xerorthents, granitic - Rock outcrop association, 50 to 90 percent slopes	1,942	0.1
161	Lithic Xerorthents, ultramafic, 30 to 70 percent slopes	1,004	0.1
162	Lithic Xerumbrepts - Rock outcrop association, 15 to 90 percent slopes	15,167	0.9
163	Merkel family, 2 to 30 percent slopes	999	0.1
164	Morical - Worley families association, 2 to 50 percent slopes	2,130	0.1
165	Nanny family, 2 to 30 percent slopes	18,268	1.0
166	Nanny family, 30 to 50 percent slopes	19,830	1.1
167	Neuske - Etchen families complex, 2 to 9 percent slopes	13,835	0.8
168	Olete family - Lithic Ruptic-Xerochreptic Haploxerafls association, 30 to 90 percent slopes	6,919	0.4
169	Oosen - Avis families complex, 2 to 15 percent slopes	19,084	1.1
170	Ovall family - Entic Xerumbrepts - Zeibright family association, 30 to 70 percent slopes	7,143	0.4
171	Parks family - Lithic Ruptic-Xerochreptic Haploxerafls association, 30 to 90 percent slopes	3,757	0.2
172	Quam family, 0 to 5 percent slopes	9,617	0.5

Map Symbol	Map Unit Name	Acres	Percent
173	Redcap - Stonewell families association, 2 to 30 percent slopes	3,834	0.2
174	Riverwash	5,146	0.3
175	Rock outcrop - Teewinot family association, 50 to 90 percent slopes	9,454	0.5
176	Rogue - Jayar families association, 30 to 50 percent slopes	6,270	0.4
177	Ruclick - Cowiche families association, 2 to 9 percent slopes	11,803	0.7
178	Ruclick - Deven families complex, 0 to 9 percent slopes	21,183	1.2
179	Ruclick - Deven families complex, 15 to 30 percent slopes	974	0.1
180	Sheld - Iller families complex, 5 to 50 percent slopes	60,428	3.3
181	Sheld family - Lava flows complex, 30 to 70 percent slopes	4,115	0.2
182	Skalan - Clallam, deep families association, 30 to 70 percent slopes	23,496	1.3
183	Skalan - Clallam, deep - Decy families association, 15 to 70 percent slopes	26,314	1.5
184	Skalan family - Lithic Haploxerafs association, 30 to 90 percent slopes	27,425	1.6
185	Skalan family - Lithic Mollic Haploxerafs association, 30 to 70 percent slopes	22,786	1.3
186	Tallac - Nanny families association, 9 to 30 percent slopes	1,315	0.1
187	Tallac family - Ultic Haploxerafs association, 15 to 50 percent slopes	14,829	0.8
188	Tangle family, 15 to 50 percent slopes	8,817	0.5
189	Teewinot - Endlich families association, 50 to 90 percent slopes	31,646	1.8

Map Symbol	Map Unit Name	Acres	Percent
190	Teewinot family - Rock outcrop association, 50 to 90 percent slopes	8,122	0.5
191	Toadlake family - Lithic Argixerolls association, 30 to 70 percent slopes	4,957	0.3
192	Trojan - Kilmerque families association, 2 to 9 percent slopes	17,937	1.0
193	Typic Haploxerolls - Lithic Haploxerolls - Rock outcrop complex, 30 to 90 percent slopes	2,937	0.2
194	Vipont - Hades families association, 15 to 50 percent slopes	13,723	0.8
195	Washoe family, 0 to 5 percent slopes	5,019	0.3
196	Weitchpec family - Lithic Haploxeralfs association, 30 to 90 percent slopes	7,320	0.4
197	Woodseye family - Rock outcrop association, 50 to 90 percent slopes	32,519	1.8
198	Woodseye - Jayar families association, 30 to 70 percent slopes	58,246	3.2
199	Mollic Palexeralf - Mollic Haploxeralfs association, 15 to 50 percent slopes	2,202	0.1
TOTALS:		1,761,065	100.0

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