



United States
Department of
Agriculture

Forest Service

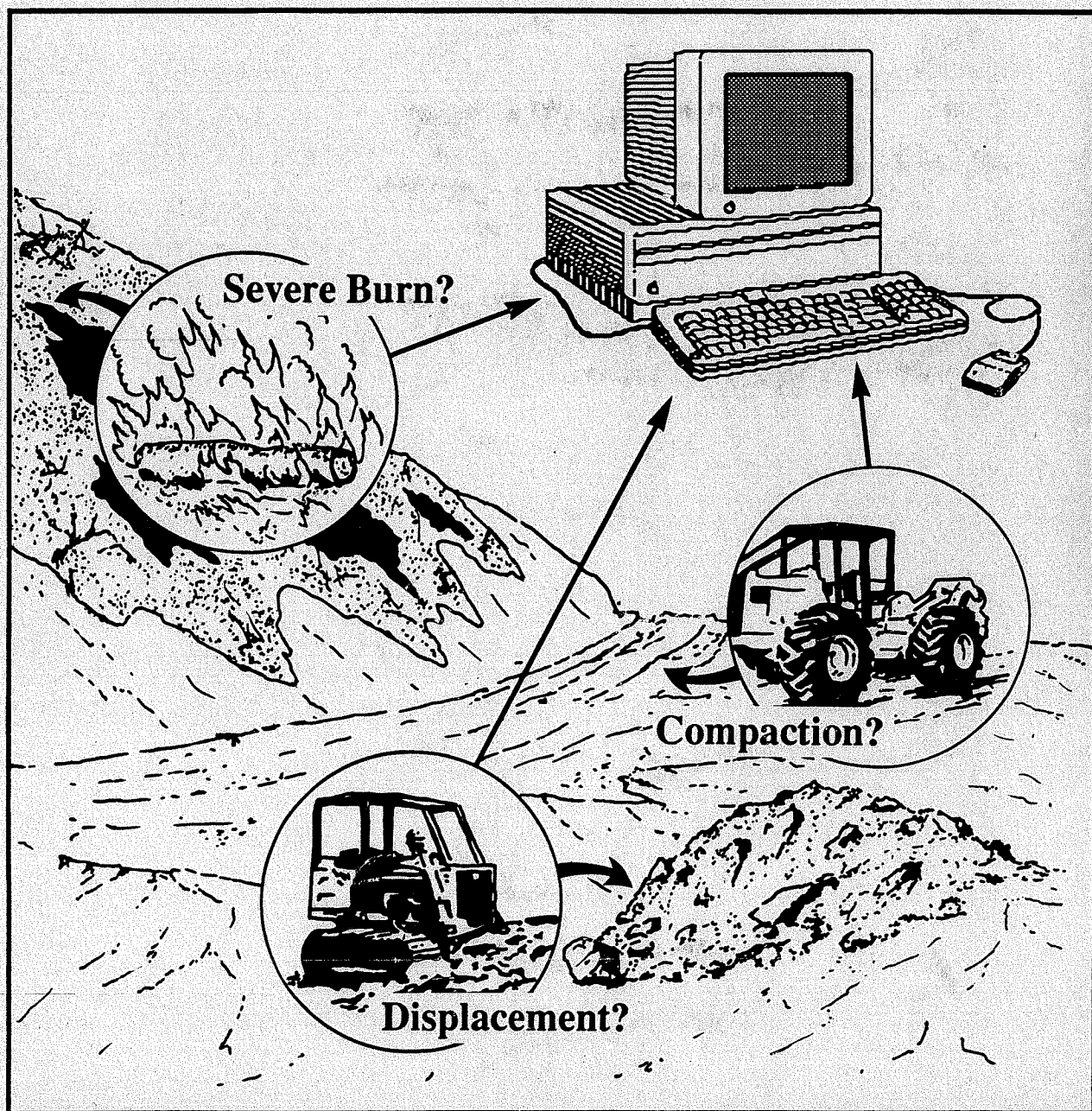
Pacific
Northwest
Region



Soil Resource Inventory

June 1992

Gifford Pinchot National Forest



Soil Resource Inventory

Gifford Pinchot National Forest

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INTRODUCTION

INTRODUCTION

History of the Soil Resource Inventory (SRI)

The Soil Survey Program in Region 6 began in the mid-1950's. It consisted of both reconnaissance and detailed soil surveys on several National Forests. Around 1960 a reconnaissance-type survey was started in the west side Oregon forests called the "Mantle Stability Survey." This survey was designed to map the stability and surface erosion potential of soils and bedrock to give land managers assistance in road location and design and timber sale layout. This survey took into account soil properties, landforms, and bedrock type as they related to mass wasting and erosion and the principles of photo interpretation and stereoscopic study of aerial photography. This program was completed in the west side forests of Oregon in 1966. It was also the forerunner of the Region-wide Soil Resource Inventory (SRI).

The Soil Resource Inventory program was established in Region 6 to soil survey all National Forest land by 1980. It followed the principles of mapping forest land established in the Mantle Stability Survey. The soil mapping unit component includes the soil, landform, bedrock, and vegetation. The SRI contained more management interpretations than other types of soils surveys.

The SRI on the Gifford Pinchot NF was the first started (1967) in Region 6 and was completed in 1971, with the report published in 1972. SRI mapping has been periodically updated between 1975 and 1990. Changes in mapping have been kept current in the Total Resource Inventory System (TRI). In the future, changes will be made in the Geographic Information System.

Changes to the 1972 Gifford Pinchot National Forest Soil Resource Inventory

The Soil Resource Inventory (SRI) update incorporates changes and adds some revised aspects to the original Soil Resource Inventory (1972) and interim "Blue Book." The most important change is with the soil maps. The original inventory included hard copy maps. The update recognizes the continued effort to upgrade mapping as more is learned about the resource. The Forest employs a Graphic Information System (GIS), a computer system which stores the mapping. Soil maps can now be provided with the most current information for specific location at a desired scale.

Another refinement changes the numbering system for soil mapping unit identification. Chapter III provides legend correlation to go from the old to the new and from the new to the old. The following is a summary of the new numbering system for the soil mapping units (SMU's).

SMU's 1-10	Miscellaneous units such as meadows and rock land with limited coniferous forest.
SMU's 11-24	All deep soils >12' found throughout the Forest.
SMU's 25-37	Deep pumice and ash-dominated soils found mostly north of North Fork Lewis River drainage.
SMU's 40-46	Soils derived from andesite and basalt with pumice and ash soils, mostly north of North Fork Lewis River drainage.
SMU's 50-59	Soils derived from volcanic tuffs and breccia with pumice and ash soils, mostly north of the North Fork Lewis River drainage.
SMU's 70-78	Soils derived from volcanic sediments found in mineral block (a separate block of Forest Service land located northwest of Morton, Washington.)

- SMU's 81-88 Soils derived from volcanic sediments, tuffs, and breccia found south of the North Fork Lewis River and west of White Salmon drainage.
- SMU's 91-95 Soils derived from andesite and basalt found south of the North Fork Lewis River drainage.

Soil mapping unit complexes use a 4-digit number instead of 3 digits. The two soil mapping units that make up the complex become more apparent. For instance:

Old complex 154 was made up of 50 percent soil mapping unit 15 and 50 percent soil mapping unit 94. The new complex is 1594, both competent part, soil mapping units 15 and 94, are used in identifying the complex.

Many of the soil mapping unit interpretations found in the original soil resource inventory and Blue Book are also found in the update. Some interpretations were dropped for the lack of use. Soil mapping unit descriptions are the same as in the original Soil Resource Inventory but are recorded in a new format. The Table of Soil Characteristics, Features, and Qualities, and Table of Bedrock Characteristics are included.

MAPPING UNIT LEGEND

MAPPING UNIT LEGEND

A mapping unit legend is a listing of all the mapping units (alpha/numeric characters) used in the Soil Resource Inventory. In this case the list is supplemental, in some cases with suffixes which are described on Pages III-1 to III-3.

For this report the legend is: There are two arrangements displayed to aid past users of this survey. The first arrangement shows the now applicable soil mapping unit number in numeric in the left column and on the adjacent right column is the legend from the blue book era of the SRI. The second arrangement is the reverse, the old legend in numeric order in the left column and the new in the right column.

MAPPING UNIT LEGEND OF NEW AND OLD

New Mapping Unit No.	Old Mapping Unit No.
W	Water
Q	Quarry
1	1
2	2
3	3
4	4
5A	5A
5B	5B
5C	5C
6	6
6K	6K
7	7, 22, 23
7E	7E, 23E
7F	7F
7K	7K
8	8, 24
8E	8E, 24E
9	9
10	NA
11	11
12	12, 55, 56
13	13
14	14
15	15
16	16
17	17
18	18
19	19

New Mapping Unit No.	Old Mapping Unit No.
21	75
22	76
23	25, 27
24	26, 28
25	20
26	21
27	51
28	52
29	54
31	57
34	63
35	65
36	67
37	68
40	40
41	41, 47, 48
41T	41
42	42
42T	42
43	43
44	44
45	45
46	46
50	30
51	31
51T	31
52	35
53	32

New Mapping Unit No.	Old Mapping Unit No.
54	38
56	36
57	33, 37
58	34
59	39
70	N/A
71	81
72	82
73	83
74	84
75	85
77	87
81	81
82	82
83	83
84	84
85	85
87	87
88	88
89	89
91	71, 91
92	92
93	93
94	94
95	95

LEGEND

LEGEND OF COMPLEXES

MU# NEW	Mapping Unit Components NEW	MU# OLD	Mapping Unit Components OLD
1231	50% Unit 12 and 50% Unit 31	561	50% Unit 56 and 50% Unit 57
1594	50% Unit 15 and 50% Unit 94	154	50% Unit 15 and 50% Unit 94
1641	60% Unit 16 and 40% Unit 41	161	60% Unit 16 and 40% Unit 41
1642	60% Unit 16 and 40% Unit 42	162	60% Unit 16 and 40% Unit 42
1651	60% Unit 16 and 40% Unit 51	163	60% Unit 16 and 40% Unit 31
1795	50% Unit 17 and 50% Unit 95	172	50% Unit 17 and 50% Unit 95
1841T	60% Unit 18 and 40% Unit 41T	181	60% Unit 18 and 40% Unit 41
1892	50% Unit 18 and 50% Unit 92	184	50% Unit 18 and 50% Unit 92
2324	60% Unit 23 and 40% Unit 24	256	60% Unit 25 and 40% Unit 26
2324	60% Unit 23 and 40% Unit 24	287	60% Unit 28 and 40% Unit 27
2423	60% Unit 24 and 40% Unit 23	265	60% Unit 26 and 40% Unit 25
2493	50% Unit 24 and 50% Unit 93	263	50% Unit 26 and 50% Unit 93
2640	70% Unit 26 and 30% Unit 40	210	70% Unit 21 and 30% Unit 40
2957	60% Unit 29 and 40% Unit 57	547	60% Unit 54 and 40% Unit 37
3157	60% Unit 31 and 40% Unit 57	577	60% Unit 57 and 40% Unit 37
3429	60% Unit 34 and 40% Unit 29	631	60% Unit 63 and 40% Unit 54
3556	60% Unit 35 and 40% Unit 56	656	60% Unit 65 and 40% Unit 36
4116	60% Unit 41 and 40% Unit 16	412	60% Unit 41 and 40% Unit 16
4140	70% Unit 41 and 30% Unit 40	410	70% Unit 41 and 30% Unit 40
41T40	70% Unit 41T and 30% Unit 40	410	70% Unit 41 and 30% Unit 40
4151	50% Unit 41 and 50% Unit 51	415	50% Unit 41 and 50% Unit 31
41T18	60% Unit 41T and 40% Unit 18	418	60% Unit 41 and 40% Unit 18
4216	60% Unit 42 and 40% Unit 16	426	60% Unit 42 and 40% Unit 16
42T18	60% Unit 42T and 40% Unit 18	428	60% Unit 42 and 40% Unit 18

LEGEND OF COMPLEXES (continued)

MU# NEW	Mapping Unit Components NEW	MU# OLD	Mapping Unit Components OLD
4240	70% Unit 42 and 30% Unit 40	420	70% Unit 42 and 30% Unit 40
42T40	70% Unit 42T and 30% Unit 40	420	70% Unit 42 and 30% Unit 40
4603	60% Unit 46 and 40% Unit 3	463	60% Unit 46 and 40% Unit 3
5116	60% Unit 51 and 40% Unit 16	312	60% Unit 31 and 40% Unit 16
5150	70% Unit 51 and 30% Unit 50	310	70% Unit 31 and 30% Unit 30
51T18	60% Unit 51T and 40% Unit 18	318	60% Unit 31 and 40% Unit 18
5216	60% Unit 52 and 40% Unit 16	356	60% Unit 35 and 40% Unit 16
5250	70% Unit 52 and 30% Unit 50	350	70% Unit 35 and 30% Unit 30
5351	60% Unit 53 and 40% Unit 51	321	60% Unit 32 and 40% Unit 31
5357	60% Unit 53 and 40% Unit 57	322	60% Unit 32 and 40% Unit 33
5654	60% Unit 56 and 40% Unit 54	368	60% Unit 36 and 40% Unit 38
5754	60% Unit 57 and 40% Unit 54	378	60% Unit 37 and 40% Unit 38
5923	60% Unit 59 and 40% Unit 23	395	60% Unit 39 and 40% Unit 25
7122	60% Unit 71 and 40% Unit 22	816	60% Unit 81 and 40% Unit 76
7170	70% Unit 71 and 30% Unit 70	810	70% Unit 81 and 30% Unit 30
7173	50% Unit 71 and 50% Unit 73	813	50% Unit 81 and 50% Unit 83
7222	60% Unit 72 and 40% Unit 22	826	60% Unit 82 and 40% Unit 76
7270	70% Unit 72 and 30% Unit 70	820	70% Unit 82 and 30% Unit 30
7273	60% Unit 72 and 40% Unit 73	823	60% Unit 82 and 40% Unit 83
8122	60% Unit 81 and 40% Unit 22	816	60% Unit 81 and 40% Unit 76
8150	70% Unit 81 and 30% Unit 50	810	70% Unit 81 and 30% Unit 30
8183	50% Unit 81 and 50% Unit 83	813	50% Unit 81 and 50% Unit 83
8184	50% Unit 81 and 50% Unit 84	814	50% Unit 81 and 50% Unit 84
8191	50% Unit 81 and 50% Unit 91	811	50% Unit 81 and 50% Unit 91

LEGEND OF COMPLEXES (continued)

MU# NEW	Mapping Unit Components NEW	MU# OLD	Mapping Unit Components OLD
8222	60% Unit 82 and 40% Unit 22	826	60% Unit 82 and 40% Unit 76
8250	70% Unit 82 and 30% Unit 50	820	70% Unit 82 and 30% Unit 30
8283	60% Unit 82 and 40% Unit 83	823	60% Unit 82 and 40% Unit 83
8284	60% Unit 82 and 40% Unit 84	824	60% Unit 82 and 40% Unit 84
8287	60% Unit 82 and 40% Unit 87	827	60% Unit 82 and 40% Unit 87
8322	60% Unit 83 and 40% Unit 22	836	60% Unit 83 and 40% Unit 76
8387	60% Unit 83 and 40% Unit 87	837	60% Unit 83 and 40% Unit 87
9116	60% Unit 91 and 40% Unit 16	918	60% Unit 91 and 40% Unit 16
9122	60% Unit 91 and 40% Unit 22	916	60% Unit 91 and 40% Unit 76
9140	70% Unit 91 and 30% Unit 40	910	70% Unit 91 and 30% Unit 40
9240	70% Unit 92 and 30% Unit 40	920	70% Unit 92 and 30% Unit 40

MAPPING UNIT LEGEND OF OLD AND NEW

Old Mapping Unit No.	New Mapping Unit No.
Water	W
Quarry	Q
1	1
2	2
3	3
4	4
5	5
5A	5A
5B	5B
5C	5C
6	6
6K	6K
7	7
7E	7E
7F	7E
7K	7K
8	8
8E	8E
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19

Old Mapping Unit No.	New Mapping Unit No.
20	25
21	26
22	7
23	7
23E	7E
24	8
24E	8E
25	23
26	24
27	23
28	24
30	50
31	51
32	53
33	57
34	58
35	52
36	56
37	57
38	54
39	59
40	40
41	41
42	42
43	43
44	44
45	45
46	46
47	41

Old Mapping Unit No.	New Mapping Unit No.
48	41
51	27
52	28
54	29
55	12
56	37
57	31
63	34
65	35
67	36
68	37
71	91
75	21
76	22
81	71, 81
82	72, 82
83	73, 83
84	74, 84
85	75, 85
87	77, 87
88	88
89	89
91	91
92	92
93	93
94	94
95	95

LEGEND

LEGEND OF COMPLEXES

MU# OLD	Mapping Unit Components OLD	MU# NEW	Mapping Unit Components NEW
154	50% Unit 15 and 50% Unit 94	1594	50% Unit 15 and 50% Unit 94
161	60% Unit 16 and 40% Unit 41	1641	60% Unit 16 and 40% Unit 41
162	60% Unit 16 and 40% Unit 42	1642	60% Unit 16 and 40% Unit 42
163	60% Unit 16 and 40% Unit 31	1651	60% Unit 16 and 40% Unit 51
172	50% Unit 17 and 50% Unit 95	1795	50% Unit 17 and 50% Unit 95
181	60% Unit 18 and 40% Unit 41	1841T	60% Unit 18 and 40% Unit 41T
184	50% Unit 18 and 50% Unit 92	1892	50% Unit 18 and 50% Unit 92
210	70% Unit 21 and 30% Unit 40	2640	70% Unit 26 and 30% Unit 40
256	60% Unit 25 and 40% Unit 26	2324	60% Unit 23 and 40% Unit 24
263	50% Unit 26 and 50% Unit 93	2493	50% Unit 24 and 50% Unit 93
265	60% Unit 26 and 40% Unit 25	2423	60% Unit 24 and 40% Unit 23
287	60% Unit 28 and 40% Unit 27	2324	60% Unit 23 and 40% Unit 24
310	70% Unit 31 and 30% Unit 30	5150	70% Unit 51 and 30% Unit 50
312	60% Unit 31 and 40% Unit 16	5116	60% Unit 51 and 40% Unit 16
318	60% Unit 31 and 40% Unit 18	51T18	60% Unit 51T and 40% Unit 18
321	60% Unit 32 and 40% Unit 31	5351	60% Unit 53 and 40% Unit 51
322	60% Unit 32 and 40% Unit 33	5357	60% Unit 53 and 40% Unit 57
350	70% Unit 35 and 30% Unit 30	5250	70% Unit 52 and 30% Unit 50
356	60% Unit 35 and 40% Unit 16	5216	60% Unit 52 and 40% Unit 16
368	60% Unit 36 and 40% Unit 38	5654	60% Unit 56 and 40% Unit 54
378	60% Unit 37 and 40% Unit 38	5754	60% Unit 57 and 40% Unit 54
395	60% Unit 39 and 40% Unit 25	5923	60% Unit 59 and 40% Unit 23
410	70% Unit 41 and 30% Unit 40	4140	70% Unit 41 and 30% Unit 40
412	60% Unit 41 and 40% Unit 16	4116	60% Unit 41 and 40% Unit 16

LEGEND OF COMPLEXES (continued)

MU# OLD	Mapping Unit Components OLD	MU# NEW	Mapping Unit Components NEW
415	50% Unit 41 and 50% Unit 31	4151	50% Unit 41 and 50% Unit 51
418	60% Unit 41 and 40% Unit 18	41T18	60% Unit 41T and 40% Unit 18
420	70% Unit 42 and 30% Unit 40	4240	70% Unit 42 and 30% Unit 40
426	60% Unit 42 and 40% Unit 16	4216	60% Unit 42 and 40% Unit 16
428	60% Unit 42 and 40% Unit 18	42T18	60% Unit 42T and 40% Unit 18
463	60% Unit 46 and 40% Unit 3	4603	60% Unit 46 and 40% Unit 3
547	60% Unit 54 and 40% Unit 37	2957	60% Unit 29 and 40% Unit 57
561	50% Unit 56 and 50% Unit 57	1231	50% Unit 12 and 50% Unit 31
577	60% Unit 57 and 40% Unit 37	3157	60% Unit 31 and 40% Unit 57
631	60% Unit 63 and 40% Unit 54	3429	60% Unit 34 and 40% Unit 29
656	60% Unit 65 and 40% Unit 36	3556	60% Unit 35 and 40% Unit 56
810	70% Unit 81 and 30% Unit 30	8150	70% Unit 81 and 30% Unit 50
811	50% Unit 81 and 50% Unit 91	8191	50% Unit 81 and 50% Unit 91
813	50% Unit 81 and 50% Unit 83	8183	50% Unit 81 and 50% Unit 83
814	50% Unit 81 and 50% Unit 84	8184	50% Unit 81 and 50% Unit 84
816	60% Unit 81 and 40% Unit 76	8122	60% Unit 81 and 40% Unit 22
820	70% Unit 82 and 30% Unit 30	8250	70% Unit 82 and 30% Unit 50
823	60% Unit 82 and 40% Unit 83	8283	60% Unit 82 and 40% Unit 83
824	60% Unit 82 and 40% Unit 84	8284	60% Unit 82 and 40% Unit 84
826	60% Unit 82 and 40% Unit 76	8222	60% Unit 82 and 40% Unit 22
827	60% Unit 82 and 40% Unit 87	8287	60% Unit 82 and 40% Unit 87
836	60% Unit 83 and 40% Unit 76	8322	60% Unit 83 and 40% Unit 22
837	60% Unit 83 and 40% Unit 87	8387	60% Unit 83 and 40% Unit 87
910	70% Unit 91 and 30% Unit 40	9140	70% Unit 91 and 30% Unit 40

LEGEND OF COMPLEXES (continued)

MU# OLD	Mapping Unit Components OLD	MU# NEW	Mapping Unit Components NEW
916	60% Unit 91 and 40% Unit 76	9122	60% Unit 91 and 40% Unit 22
918	60% Unit 91 and 40% Unit 16	9116	60% Unit 91 and 40% Unit 16
920	70% Unit 92 and 30% Unit 40	9240	70% Unit 92 and 30% Unit 40

MINERAL BLOCK

MU# OLD	Mapping Unit Components OLD	MU# NEW	Mapping Unit Components NEW
810	70% Unit 81 and 30% Unit 30	7170	70% Unit 71 and 30% Unit 70
813	50% Unit 81 and 50% Unit 83	7173	50% Unit 71 and 50% Unit 73
816	60% Unit 81 and 40% Unit 76	7122	60% Unit 71 and 40% Unit 22
820	70% Unit 82 and 30% Unit 30	7270	70% Unit 72 and 30% Unit 70
823	60% Unit 82 and 40% Unit 83	7273	60% Unit 72 and 40% Unit 73
826	60% Unit 82 and 40% Unit 76	7222	60% Unit 72 and 40% Unit 22

SOIL MAPPING UNIT SUFFICES

SOIL MAPPING UNIT SUFFICES

Soil Mapping Unit descriptions for the numeric portion of the mapping symbol are given under Mapping Unit Descriptions (Chapter 7). The Gifford Pinchot National Forest has used an alpha suffix on some Soil Mapping Units to denote the situations described in the right column. Note that within this description there are some terms referring to Management direction and suitability. These are codes used in "TRI." Suitability in this case is the field classified lands as to their suitability for timber production.

- Suitability "N" = Not forest land (not 10% occupied by forest trees or developed for non-Forest use.
- Suitability "S" = Suitable for timber production.
- Suitability "T" = Technology not available to ensure timber production without irreversible resource damage.

Management direction codes are described as follows:

- "TM" = "Marginal, resource limitations. Erodable soils, terrain and topographic barriers, and need for stream coarse protection from siltation make are unsuitable for logging with currently available logging systems."
- "TMR" = Marginal, regeneration uncertain. Use only if no regeneration cutting is to be permitted on an area until procedure has been developed which will ensure adequate regeneration.

Suffix	Soil Mapping Units	Situation
A		"A" is used in mapping to indicate that the mapping unit delineation is primarily less than 30 percent slope.
B		"B" is used in mapping to indicate that the mapping unit delineation is primarily greater than 30 percent slope.
C	5C	"C" is used to break out the part of Mapping Unit 5 that is at high elevation where productivity is very low and regeneration is extremely difficult. Suitability is "N", not forest land (not 10% occupied by forest trees).
E	6E, 7E, 8E, 9E, 19E	"E" is used to indicate areas where rock outcrop and rock exposure are high, talus is often common, and/or generally the soil content in the surface layer is less than 20 percent by volume, and/or the depth to bedrock is generally less than 1 foot. Management direction is "TMR." Suitability is "T." There is no assurance that reforestation would be successful in a five-year time frame. An additional feature is that slope generally exceeds 60 percent, thus debris slide or avalanche risk is fairly high.

Suffix	Soil Mapping Units	Situation
F	<p>7F, 8F</p> <p>46F, 4603F</p> <p>19F, 54F, 56F, 57F, 59F, 77F, 87F, 3556F, 5654F, 5754F</p>	<p>"F" used with these mapping units is the same as for "E" above. The difference is that slope generally is less than 60 percent, thus a reduced risk of debris slides or avalanches.</p> <p>"F" used with these mapping units indicates there is a very short growing season and the soil is cold and/or there is a high water table leading to a park-like situation of meadows between clumps or stringers of established trees. Management direction is "TMR." Suitability is "T."</p> <p>"F" used with these mapping units indicates there is a high risk of high risk of failure caused by man's activities which, because of proximity to streams, will produce unacceptable sedimentation to a stream and irreversible damage to the soil resource. Locally, there could be a high risk to life and property. Management direction is "TML." Many of these areas have been field verified. Suitability is "T," technology not available to ensure timber production without irreversible resource damage.</p>
K	6K, 7K, 8K, 4603K	<p>"K" used with these mapping units recognizes a soil and/or climate situation which would be difficult to reforest, but which has been assessed by District Silviculturist to be a situation where use of a current practice and correct species of selection will allow for assurance of reforestation within 5 years. Suitability is "S."</p>
N		<p>"N" relates primarily to small, nonvegetated areas, road fill, or waste areas generally caused through man's activities. These are candidates for revegetation efforts. "N" does not occur as a suffix to mapping unit numbers on the soil subsystem layer. It occurs only as an indicator in the master cell file. It is the same as a nonforest (NM) on the ecoclass subsystem. Suitability is "N."</p>

Suffix	Soil Mapping Units	Situation
R	26R, 31R, 35R, 2640R, 5754R, 1231R, 3157R 92R 95R	<p>"R" used with these mapping units indicates productive lands prior to the May 18, 1980, eruption of Mount St. Helens. These areas now have a new ash/pumice layer of greater than 8 inches in depth over the buried soil, and slopes for the mapping units are generally greater than 60 percent. Management direction is "TMR." Safety was also a consideration in these areas. Suitability is "R."</p> <p>"R" with this mapping unit indicates a very difficult reforestation situation in the Yacolt area. Soil content in the surface layer is less than 20 percent by volume and depth to a tilted bedrock layer is less than 2 feet. The bedrock layers are tipped perpendicular to the slope. The units are located on ridgetops. The combination of limited soil, bedrock tip, and exposure to east winds makes reforestation very difficult. Management direction is "TMR." Suitability is "T."</p> <p>"R" used with this mapping unit indicates a very difficult reforestation situation south of Mount St. Helens. The mapping units have soils of less than 2 feet in depth over lava. Cold air moves from the mountain through the lava which establishes a cold soil situation. Reforestation efforts in the past have met with little success. Management direction is "TMR." Suitability is "T."</p>
S		<p>"S" relates primarily to small natural slides which are nonvegetated within mass movement areas. "S" does not occur on the soil subsystem layer. It occurs only as an indicator in the master cell file and is mapped as a nonforest area on the ecoclass subsystem. Suitability is "N."</p>
T	41T, 42T, 51T, 1841T, 41T18, 42T18, 51T18	"T" relates to true fir timber types.
Q	Q	"Q" indicates a rock quarry or road rock storage area. Suitability is "N."
W	W	"W" indicates an area of significant amount of water. Suitability is "N."

LANDFORMS

LANDFORMS OF THE GIFFORD PINCHOT NATIONAL FOREST

There are many different soils on the Forest. These different soils result from variations in one or more of the soil-forming processes, five of which are recognized in soil formation. These are climate, vegetative cover, time, topography, and parent material. Of these, the two that are considered the most significant at the level of soil identification in this report are parent material and topography. Both form the basis for landform discussion.

A very strong influence on soil formation on much of the Forest has been volcanic ejecta of pumice and ash. These materials are present in the soil profile to some degree on more than three-fourths of the Forest. This ejecta is from a number of sources. Ash, probably from Mt. Rainier, has been deposited on the north Forest soils to a depth of 2 to 12 inches. Throughout much of the Forest, vast quantities of pumice and ash, originating from Mount St. Helens, is the dominant soil feature. The 1980 eruption and those which have followed have added new pumice and ash. Within 6 miles of the volcano as much as 12 inches or more was added in a north and northeaster direction. The depth of the new ash becomes less with distance and direction from the volcano. As much as 4 inches of new ash was delivered to the Packwood area. Ash from Mt. Adams, Mt. Mazoma, and other volcanos can be found on the Forest.

Many soils have been formed from residual (soil formed in place) or colluvial (soil profile form through gravitational movement of rock and soil components) bedrock materials. The properties of soil depth and textures are related to the kind of bedrock, and influenced by the topography.

The bedrock of the Forest is primarily of volcanic origin. Although many variabilities of the bedrock occur, it can be placed into two classes. One class consists of hard rocks formed from volcanic lavas. These include basalts, andesites, and andesitic breccias. The second class ranges from hard to soft and consists of rock formed from volcanic ejecta that become consolidated. This class is highly variable and includes volcanic breccias and volcanic sediment which sometimes are referred to as pyroclastic flows. Two additional kinds of bedrock are found on the Forest. One is a marine sediment rock which is generally moder-

ately hard found in the mineral block. The second is a dacite intrusive rock found in numerous scatter locations around the Forest.

Landforms on the Forest can be divided and subdivided in many ways. The approach as presented below was taken during Forest Planning. The primary goal was to minimize the number of landform yet be able to characterize the Forest on a basis of difficulty to manage with some reflection on the cost to develop a transportation system. Seven landforms were used to reach this goal. Further subdivision may be use for different problems or completely new groups can be formed for a stated purpose. No approach can be right or useable situations.

Gentle Sloping Pumice and Ash Landforms/Soils

These landforms with the thick to very thick pumice and ash soils layers are found south of Highway 12 on the Randle Ranger District and on the Mount St. Helens National Volcanic Monument. Approximately 97,100 acres are included in this group. Generally, ash and pumice layers are more than 36 inches thick over colluvial and residual soil. The landform are varied. Included are flat valley bottoms where ash and pumice has accumulated. There are flat benches and ridgetops. The thickness of ash and pumice is variable. There are a few areas of uneven slopes where the ash and pumice layers tend to be thick over variable layers of residual heavy (clayey) soils. These local areas could just as well be included in the Unstable Landform Group.

Steep Sloping Pumice and Ash Landforms/Soils

These landforms with the thick to very thick pumice and ash soils layers are found south of Highway 12 on the Randle Ranger District and on the Mount St. Helens National Volcanic Monument. Approximately 42,000 acres are included in this group. Generally, ash and pumice layers are more than 36 inches thick over colluvial and residual soil. The landform are varied. The pumice and ash layers tend to be deeper on the lower slopes as a result of accumulation. Slopes may be steep and smooth or steep and dissected, thus for these

reasons could be group with the two steep landform descriptions listed below.

Gentle Sloping Landforms with Shallow to Very Deep Soils

These forested lands are found scattered throughout the Forest. Approximately 321,500 acres are included in this group. Slope ranges from 0 to 30 percent. The cost of harvest/transportation systems is lowest in these areas. Not included are 56,000 acres of Landform 1a and 42,000 acres of Landform 5 lands which also have slopes of less than 30 percent.

Steep Smooth Landforms with Shallow to Moderately Deep Soils

This is the major land class on the Forest. Approximately 494,800 acres are included in this group. Slopes range from 30 to 100 percent; the average is approximately 45 percent. Slopes generally have a drainage density of five or less drainage miles per square mile. Soils range from very deep glacial till on the toe slopes of glacial valleys to very thin residual soils near ridgetops.

Steep Dissected Landforms with Shallow to Moderately Deep Soils

Six percent or approximately 102,100 acres of the Forest is in this Land Class, with slopes ranging

from 30 to 100 percent; the average is approximately 50 percent. These slopes generally have drainage density of greater than five stream miles per square mile. Soils are generally shallow, residual, or colluvial. The majority of debris slides and avalanche tracks on suitable forest lands occur in these area.

Uneven and/or Steep Unstable Landforms with Shallow to Deep Soils

These areas are significant because of the potential for delivering sediment and special provisions for timber harvest and road construction they often require. Slopes are uneven, with variable steep and gentle slopes having, on the average, four stream miles per square. Approximately 97,800 acres are included in this group.

Nonforest Lands Ranging from Steep Rocky Areas to Meadows

These lands include a variety of features. Snow and ice on high elevation peaks, alpine areas, lakes, rock outcrop and talus slopes, shrublands and meadows of all types make up this land. There are a few other small acre situations which are included. Currently, the Mount St. Helens landslide is also included. Others are approximately 223,600 acres included in this group.

GUIDE TO USE OF KEY

GUIDE TO USE OF KEY

The key presented here is basically dichotomous -- the user has two mutually exclusive choices; i.e., MUs are miscellaneous units or regular units. The user should move *forward* choosing between the two descriptions of each numerical set until the selected choice is right. Once you have zeroed in on the proper mapping unit, refer to the description and guideline sections for further information.

If you are unfamiliar with this type of keying system, follow this example: You know the mapping unit is hummocky, unstable, about eight feet deep on a 53% slope with about six inches of aeolian (ash and/or pumice) materials at the surface and has a pyroclastic bedrock.

Starting at key numbers 1, the MU is a regular homogeneous unit so your choice is the second number 1.

Next, key numbers 19: the depth is about eight feet so you choose the second number 19 (MUs are shallow to deep over bedrock).

Next, key numbers 40: the bedrock is a pyroclastic so you choose the second number 40.

- Six inches is greater than one inch of ash and pumice so you choose the first number 58.
- Six inches is less than a foot so you choose the first number 59.
- 53 percent is steep so you choose the first number 60.
- Eight feet deep is a moderately deep soil so you can choose the second 61.
- You have to get more information. Consulting your air photos, you note a landflow so you choose the second number 66, and your MAPPING UNIT IS 59. You now refer to the guidelines and descriptions for further information.

MAPPING UNIT KEY

1. MUs are a miscellaneous unit (a nonhomogeneous soil, soil/rock, or rock situation) (MUs - W, Q, 1, 2, 3, 4, 5A, 5B, 5C, 6, 7, 8, 9, 10, 40, 50, and 70)
 2. MUW Water
 3. MUQ Quarry
 4. MU 1 Alluvium, fresh sands and gravels
 5. MU 2 Lava flows
 6. MU 3 Marshland and wet meadows
 7. MU 4 Rock outcrop, talus, and snow and ice
 8. MU 5A Cinder Cone, gentle slopes, timbered
 9. MU 5B Cinder Cone, steep slopes, timbered
 10. MU 5C Cinder Cone, gentle to steep, nontimbered
 11. MU 6 High elevation, nontimbered, limited ash and pumice
 12. MU 7 Rugged, including rock outcrop, talus, shrub land with scattered timber
 13. MU 8 Avalanche tracks, rock outcrop, with same timber
 14. MU 9 Steep, eroding alluvium
 15. MU 10 Recent Mount St. Helens land flow material
 16. MU 40 Rock outcrop, andesite, basalt, hard andesite breccia
 17. MU 50 Rock outcrop, pyroclastic, and breccia
 18. MU 70 Rock outcrop, marine sediment rocks
1. MUs are a regular unit (a homogeneous soil situation).
19. MUs are a very deep (greater than 12 feet) to bedrock
20. MUs have ash and/or pumice of less than 4 feet on the surface.
 21. MU 11 Gentle sloping outwash plains on flanks of Mount St. Helens and Mt. Adams.
 22. MU12 Lacustrine deposits (lake laid material) in Canyon Creek and Upper Lewis River areas
 23. MUs have less than 1 inch ash and pumice on surface over deep alluvium, till or colluvium.
 24. MU 14 Alluvium.
 24. MUs are of till or colluvium.
 25. MU 21 Gentle slopes (<30% slope).
 25. MU 22 Steep slopes (>30% slope).
 23. MUs have greater than 1 inch but less than 48 inches of ash and pumice on surface over deep alluvium, till, colluvium or residuum.
 26. MUs are stable landforms.
 27. MUs subsoil texture are medium ranging to coarse.
 28. MUs Site Class for Douglas-fir is II, III, and IV.
 29. MU 13 Supports Site Class II Douglas-fir.
 29. MUs support Site Class III and IV Douglas-fir.
 30. MU 15 Occurs on gentle slopes.
 30. MU 16 Occurs on steep slopes.
 28. MUs Site Class for Douglas-fir is V.
 31. MU 17 Occurs on gentle slopes.

- 31. *MU 18* Occurs on steep slopes.
- 27. MUs subsoil texture is moderately fine
 - 32. *MU 13* Supports Site Class II Douglas-fir.
 - 32. MUs support Site Class IV and V Douglas-fir.
 - 33. *MU 23* A concave appearance with slopes of less than 10 percent where cold air may be trapped.
 - 33. *MU 24* Varied slope or is in positions where air may drain. Slope range from 0 to 50 percent.
- 26. *MU 19* Till on steep slope which is moderately stable to unstable.
- 20. MUs have ash and/or pumice of greater than 4 feet.
 - 34. MUs occur on steep slopes.
 - 35. MUs pumice and ash continues to more than 10 feet.
 - 36. *MU 26* Primarily pumice to 10 feet.
 - 36. *MU 37* Ash with interlayers of pumice to 10 feet.
- 34. MUs occur on gentle slopes.
 - 37. *MU 12* Subsoil below 4 feet is alluvium.
 - 37. MUs pumice and ash continues to more than 6 feet.
 - 38. *MU 25* is primarily pumice to 10 feet.
 - 38. MUs are primarily ash with interlayers of pumice to 10 feet.
 - 39. *MU 36* occurs generally below 2000 feet elevation and supports Site Class III Douglas-fir.
 - 39. *MU 34* occurs generally above 2000 feet elevation and supports Site Class IV and V Douglas-fir.
- 19. MUs are shallow to deep (1-12 feet) over bedrock units.
- 40. MUs have bedrock of basalt, andesite, hard andesitic breccia or quartz diorite.
- 41. MUs occur on steep slopes.
 - 42. MUs have shallow to moderately deep soils.
 - 43. MUs very thin to thin surface soil is ash and pumice.
 - 44. *MU 46* Supports subalpine (noncommercial) stands.
 - 44. MUs support western hemlock working group
 - 46. *MU 41* Smooth slopes.
 - 46. *MU 42* Dissected slopes.
 - 44. MUs support true fir timber stands (silver fir and grand fir).
 - 47. *MU 41T* Smooth slopes.
 - 47. *MU 42T* Dissected slopes
 - 43. MUs surface soil may have ash and cinders incorporated but not dominating.
 - 48. *MU 91* Occurs at lower elevations and supports Site Class III and IV Douglas-fir.
 - 48. *MU 92* Occurs at higher elevations and supports Site Class V Douglas-fir along with true fir.
- 42. MUs have deep soils.
 - 49. *MU 44* Less than 1 foot of ash.
 - 49. MUs have greater than 1 foot of ash.
 - 50. *MU 31* has smooth to slightly dissected sideslopes.
 - 50. *MU 35* has dissected slopes.

- 41. MUs occur on gentle slopes.
 - 51. *MU 43* Deep soil with less than 1 foot of ash.
 - 51. MUs have shallow to moderately deep soils.
 - 52. MUs have a surface layer of ash or pumice.
 - 53. MUs support very low site to noncommercial (subalpine) stands of timber.
 - 54. *MU 45* Supports very low site high elevation timber.
 - 54. *MU 46* Supports noncommercial (subalpine) stands of timber.
 - 53. MUs support commercial stands of timber.
 - 55. *MU 58* Very thin ash with pumice surface layer.
 - 55. *MU 29* Thin ash and pumice surface layer.
 - 52. MUs have a nonash to locally thin ash and cinder surface soil.
 - 56. *MU 93* Supports ponderosa pine along with some Douglas-fir.
 - 56. MUs support a mixed species stand.
 - 57. *MU 94* Occurs at lower elevations supporting Site Class III and Douglas-fir.
 - 57. *MU 95* Occurs at higher elevations supporting Site Class V Douglas-fir along with true fir.
- 40. MUs occur over pyroclastic or breccia rocks.
 - 58. MUs have greater than 1 inch of aeolian material (ash and/or pumice) on the surface.
 - 59. MUs have very thin (less than 1 foot) ash and pumice surface layers.
 - 60. MUs occur on steep slopes.
 - 61. MUs have shallow soils.
 - 62. MUs have stable slopes.
 - 63. MUs support western hemlock working group
 - 64. *MU 51* Smooth to slightly dissected, even slopes.
 - 64. *MU 52* Dissected even slopes.
 - 63. *MUs* support silver fir working group.
 - 65. *MU 51T* Smooth to slightly dissected, even slopes.
 - 65. *MU 52T* Dissected even slopes
 - 62. *MU 56* Unstable, steep dissected slopes.
 - 61. MUs have moderately deep to very deep soils.
 - 66. MUs have uneven slopes which are unstable.
 - 67. *MU 53* Well-drained soil.
 - 67. *MU 56* Moderately well drained soil.
 - 66. *MU 59* Uneven, hummocky slopes which are unstable to very unstable and are associated with landflows.
 - 60. MUs occur on gentle slopes.
 - 68. *MU 58* Shallow soils.
 - 68. MUs of moderately deep to deep soils.
 - 69. *MU 57* Uneven slopes which are unstable but not associated with a major landflow.
 - 69. *MU 59* Uneven, hummocky slopes which are unstable to very unstable and are associated with landflows.

- 59. MUs have thin to thick (1-10 feet) ash and pumice surface layers.
- 70. MUs occur on steep slopes.
 - 71. MU 31 Stable slopes.
 - 71. MUs have unstable slopes.
 - 72. MU 57 Uneven slopes which are not associated with landflows.
 - 72. MY 54b Uneven slopes which are associated with landflows.
- 70. MUs occur on gentle slopes.
 - 73. MUs are stable to moderately stable.
 - 74. MUs support Site Class I and II Douglas-fir.
 - 75. MU 27 Well-drained soils on gentle, smooth to slightly uneven sideslopes.
 - 75. MU 28 Moderately well-drained soils in valley bottom areas.
 - 74. MUs support Site Class IV and V Douglas-fir.
 - 76. MU 23 Concave landform which has imperfectly drained soils.
 - 76. MUs have well-drained soils.
 - 77. MU 24 Uneven appearance with residual soils occurring at less than 36 inches.
 - 77. MU 29 Even appearance with aeolian soil deeper than 36 inches.
- 73. MUs are unstable.
 - 78. MU 57 Uneven slopes not associated with a landflow.
 - 78. MU 54 Uneven slopes which are associated with landflows.
- 58. MUs have no aeolian materials or less than 1 inch of ash on the surface. (South Portion of Forest or Mineral Block)
- 79. MUs have bedrock of pyroclastic or breccia volcanic material.
 - 80. MUs occur on steep slopes.
 - 81. MU 87 Unstable.
 - 81. MUs are stable to moderately stable.
 - 82. MUs have coarse to moderately coarse textured surface soils and are generally shallow.
 - 83. MU 81 Nondissected to slightly dissected slopes.
 - 83. MU 82 Dissected slopes.
 - 82. MUs have medium textured surface soils and are generally moderately deep to very deep.
 - 84. MU 83 Occurs at lower elevations and supports Site Class III and IV Douglas-fir.
 - 84. MU 84 Occurs at higher elevations and supports Site Class V Douglas-fir.
- 80. MUs occur on gentle slopes.
 - 85. MU 89 is unstable.
 - 85. MUs are stable.
 - 86. MU 85 Generally less than 4' deep to bedrock.
 - 86. MU 88 Generally greater than 4' deep to bedrock.
- 79. MUs have bedrock of marine sediments
 - 87. MUs occur on steep slopes.

- 88. *MU 77* is unstable.
 - 88. MUs are stable to moderately stable.
 - 89. MUs have coarse to moderately coarse textured surface soils and are generally shallow.
 - 90. *MU 71* Occurs on nondissected to slightly dissected slopes.
 - 90. *MU 72* Occurs on dissected slopes.
 - 89. MUs have medium textured surface soils and are generally moderately deep to very deep.
 - 91. *MU 73* Occurs at lower elevations and supports Site Class III and IV Douglas-fir.
 - 91. *MU74* Occurs at up elevations and supports Site Class V Douglas-fir
87. MU 75 Occur on gentle slopes.

SOIL CHARACTERISTICS

SOIL CHARACTERISTICS

These terms are used in the Mapping Unit Description. They describe morphological properties of the soil.

Soil - Any and all loose, unconsolidated, weathered material on the earth's surface resting on solid, consolidated, unweathered bedrock, regardless of origin, mode of formation, or type of weathering or deposition. Generally includes any material that may be manipulated by hand tools or heavy equipment without the need of blasting except soft unweathered bedrock. In soil horizon designation, soil materials included "A", "B" and "C" horizons.

Depth of Soil to Bedrock - Distance from soil surface to consolidated, unweathered bedrock. Depth is in feet.

Shallow - less than 3 feet. (less than 91.44 cm)

Moderately deep - 3 to 6 feet. (91.44-182.88 cm)

Deep - 6 to 12 feet. (182.88-365.76 cm)

Very deep - greater than 12 feet. (greater than 365.76 cm)

Depth to Restrictive Layer in the Soil - Distance from soil surface to a layer in the soil that is highly restrictive to drainage, water transmission or root growth. Usually this is a discontinuity or stratification layer, but it may be bedrock. If it is bedrock, depth must be the same as recorded under depth to bedrock. A restrictive layer is generally not a genetic soil horizon, except in old soils that have developed claypan, hardpan or cemented horizons. Depth is in feet.

Litter - Total depth in inches of decomposed and undecomposed organic matter.

Soil Layer - Each soil layer is a homogeneous layer of soil material. Soil layers are described when soil characteristics change significantly and have definite effects on management. Layers are

usually at least 12 inches thick, unless material is very contrasting. Each layer may result from stratification or soil formation processes.

Soil Layer Thickness - Thickness of each soil layer in inches.

Soil Layer Thickness Classes - Thickness is in feet.

Very thin - less than 1 foot.

Thin - 1 to 3 feet.

Moderately thick - 3 to 6 feet.

Thick - 6 to 10 feet.

Very thick - greater than 10 feet.

Color - Stated in narrative Munsell notations for each soil layer. Colors are taken of moist crushed soil. Mottling is noted, if present, especially in subsoil layers.

Texture - Relative proportions of sand (2.0 mm. - .05 mm.), silt (.05 mm. - .002 mm.), and clay (less than .002 mm.). Standard USDA textural classes are used for each soil layer.

Textural Classes* - These classes apply when general textural terms are used for the profile sketch in the mapping unit descriptions.

Coarse-textured soils - Sands, loamy sands.

Moderately coarse-textured soils - Sandy loam, fine sandy loam.

Medium-textured soils - Very fine sandy loam, loam, silt loam, silt.

Moderately fine-textured soils - Clay loam, sandy clay loam, silty clay loam.

Fine-textured soils - Sandy clay, silty clay, clay.

Rock Fragment Quantity, Size, and Shape* -

Percent by volume occupied by consolidated fragments larger than sand size (larger 2 mm.).

Size Classes - gravel, 2 mm. - 3 inches; cobbles, 3 inches to 10 inches; stones greater than 10 inches.

Shape Classes - round, thin, flat, subangular, subround, angular, blocky, etc.

Rock Fragment Classes - Used as an adjective to textural classes. Includes gravel, cobble and stone sizes.

0 - 35% - not noted.

35 - 50% - gravelly, cobbly or stony.

50 - 80% - very gravelly, very cobbly or very stony.

80%+ - extremely gravelly, extremely cobbly or extremely stony.

Soil Structure* - Includes grade, size and type of structure for each soil layer. If no structure exists, then the soil is massive or single-grained. Concretions or shot are recorded, if present. Applies to aggregate structural units (aggregates and peds).

Grade - Degree of aggregation and expression of the differential between cohesion within aggregates and adhesion between aggregates.

Weak - Indistinct peds, barely observable in place.

Moderate - Distinct peds, moderately durable and evident.

Strong - Distinct peds in place, durable.

Size - Refers to size of aggregates according to five size classes.

Very fine - less than 5 mm.

Fine - 5 mm. to 10 mm.

Medium - 10 mm. to 20 mm.

Coarse - 20 mm. to 50 mm.

Very coarse - greater than 50 mm.

Type - Refers to relative shape of individual aggregates. There are four primary basic shapes.

Platy - Soil particles arranged around a plane, generally horizontal.

Prism-like - Soil particles arranged around a vertical line and bounded by relatively flat surface (Prismatic, Columnar).

Block-like - Soil particles arranged around a point and bounded by flat or rounded surfaces (Angular Blocky, Subangular Blocky).

Spheroidal - Soil particles arranged around a point and bounded by curved or very irregular surfaces (Granular, Crumb).

Structureless - No observable aggregation or no definite orderly arrangement of natural lines of weakness.

Massive - The soil material is coherent.

Single-grain - The soil material is incoherent.

Compaction - Relative increase in bulk density which is caused by natural pedogenic processes.

Degree of Compaction

Weak - Soil aggregates are easily broken by hand and are usually nonrestructive to water and roots.

Moderate - Soil aggregates are difficult to break by hand and resist movement and penetration of water and roots. Water may be perched or ponded for short periods of time.

Strong - Soil aggregates cannot be broken by hand. The soil exhibits nearly total restriction to water and root penetration, and usually requires ripping or blasting.

Permeability - Water or air movement in and through the soil material. The

SOIL CHARACTERISTICS

*Standard USDA Handbook 18 Definitions.

classes are based on soil texture, rock fragment content, porosity and bulk density.

Class

Very slow - Very little if any water transmission. Generally fine-textured soils - clay. Less than .05 inches/hr.

Slow - Little water transmission. Generally moderately fine-textured soils - clay loams and silty clay loams. .05 inches/hr. to 1 inch/hr.

Moderate - Good water transmission. Generally medium-textured soils - loams, silt loams. 1 inch/hr. to 5 inches/hr.

Rapid - Water transmission too great for optimum growth. Generally moderately - coarse-textured soils - sandy loams, gravelly loams. 5 inches/hr. to 10 inches/hr.

Very rapid - Excessive water transmission; soil never becomes saturated. Very porous soils. Generally coarse-textured soils - sands and gravels. Greater than 10 inches/hr.

Consistence* - Degree of cohesion and adhesion as indicated by the resistance of the soil aggregate to deformation or rupture under various moisture conditions.

Dry

Loose - Noncoherent.

Soft - Easily crushes to powder or single grain.

Slightly hard - Easily broken between thumb and forefinger.

Hard - Can be broken in the hands without difficulty but difficult to break between thumb and forefinger.

Very hard - Can be broken in hands without difficulty.

Extremely hard - Cannot be broken in hands.

Moist

Loose - Noncoherent.

Very friable - Crushes under gentle pressure.

Friable - Crushes easily under gentle to moderate pressure between thumb and forefinger.

Firm - Crushes under moderate pressure between thumb and forefinger.

Very firm - Crushes under strong pressure, barely crushable between thumb and forefinger.

Extremely firm - Crushes under very strong pressure, cannot be crushed between thumb and forefinger.

Wet

Stickiness - is measured by pressing wet soil between fingers.

Nonsticky - Practically no adherence when pressure is released.

Slightly sticky - After pressure, soil adheres to both thumb and forefinger but comes off one rather cleanly. Does not appreciably stretch.

Sticky - After pressure, soil adheres to both thumb and finger and tends to stretch somewhat before pulling apart from either digit.

Very sticky - After pressure, soil adheres strongly to both digits and is markedly stretched when they are separated.

Plasticity - is measured by rolling wet soil and observing wire.

Nonplastic - No wire is formable.

Slightly plastic - Wire forms, but soil mass easily deformed.

Plastic - Wire forms, moderate pressure required to deform soil mass.

Very plastic - Wire forms; much pressure required to deform soil mass.

Soil pH - Intensity of soil acidity or alkalinity expressed on a scale from 1 to 14.

	<i>pH</i>
Extremely acid	Below 4.5
Strongly acid	4.6 - 5.5

	<i>pH</i>
Slightly acid	5.6 - 6.4
Neutral	6.5 - 7.3
Slightly alkaline	7.4 - 8.4
Strongly alkaline	8.5 - 9.0
Very strongly alkaline	Above 9.0

MAPPING UNIT DESCRIPTION

SOIL DESCRIPTION**MAPPING UNIT 1**

Mapping Unit 1 consists of Soil 1 and inclusions of other soils. The most common inclusions are Soils 12, 13, 14, 15, and 17.

Mapping Unit 1 consists of fresh sands and gravels occurring along streams. It contains little or no vegetation and is frequently flooded.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 0-5 percent
Elevation: 1200-2500 feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION****RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL**

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

<u>Number</u>	<u>Components</u>
None	

SOIL DESCRIPTION**MAPPING UNIT 2**

Mapping Unit 2 consists of basalt and andesitic lava flows.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 0-30 percent

Elevation: 1500-4500 feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

Mapping Unit 2 is frequently barren of vegetation, but occasionally contain scattered vegetation consisting of lodgepole pine, larch, and brush.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

Number	Components
None	

SMU 2

VII-2

SOIL DESCRIPTION

Shallow to deep, sandy loam to silt loam.

MAPPING UNIT 3

Mapping Unit 3 are meadows and marshlands.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 0-5 percent

Elevation: 1200-6000 feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

Primarily sedges, rushes, grasses, tag alder, and willow.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class: Imperfectly to poorly drained

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

<u>Number</u>	<u>Components</u>
None	

SOIL DESCRIPTION**MAPPING UNIT 4**

Mapping Unit 4 includes the upper slopes of Mount St. Helens, Mt. Adams, and portions of the Cascade Crest above timberline. This unit is primarily rock outcrop, talus, and perpetual snow and ice.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 30 to greater than 100 percent
Elevation: 5000+ feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

Void of vegetation except lichens, sedges and a few hardy shrubs near timberline.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

Number	Components
None	

SMU 4

VII-4

SOIL DESCRIPTION

Consist of shallow, sandy loam soils overlying volcanic cinders.

MAPPING UNIT 5A

Mapping Unit 5A consists of cinder cones.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 0-30 percent

Elevation: 2500-5000 feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

It supports Site Class V Douglas-fir, silver fir, and some ponderosa pine.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class: Excessively drained

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Consist of shallow, sandy loam soils overlying volcanic cinders.

MAPPING UNIT 5B

Mapping Unit 5B consists of cinder cones.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 30-70 percent
Elevation: 2500-5000 feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

It supports Site Class V Douglas-fir, silver fir, and some ponderosa pine.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class: Excessively drained

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

<u>Number</u>	<u>Components</u>
None	

SMU 5B

VII-6

SOIL DESCRIPTION

Consist of shallow, sandy loam soils overlying volcanic cinders.

MAPPING UNIT 5C

Mapping Unit 5C consists of cinder cones.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 0-70 percent
Elevation: 4500+ feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

It supports subalpine vegetation.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class: Excessively drained

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soils occur intermittently and are very shallow gravelly loams or sandy loams with some areas consisting of shallow to deep ash and pumice

MAPPING UNIT 6

This mapping unit consists of rock outcrop, talus, and meadows. It occurs on high-elevation ridges.

GEOLOGY

Primarily hard andesites and breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0-90+ percent
Elevation: 5000+ feet

Soil Temperature Regime:

MANAGEMENT

VEGETATION

Supports meadow and subalpine vegetation.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

<u>Number</u>	<u>Components</u>
None	

SOIL DESCRIPTION

Soils occur intermittently and are generally very shallow to shallow gravelly medium-textured soils with some areas consisting of shallow to deep ash and pumice.

MAPPING UNIT 7

This mapping unit consists of rock outcrop, and talus slopes on rugged landforms.

GEOLOGY

Primarily hard andesite and breccias.

TOPOGRAPHY AND CLIMATE

Slope: 30+ percent
Elevation: 2000-5000 feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

Islands, stringers, and scattered low site and non-commercial timber.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

<u>Number</u>	<u>Components</u>
None	

SOIL DESCRIPTION

Soils occur intermittently and are generally very shallow to shallow gravelly medium-textured soils with some areas consisting of shallow to deep ash and pumice.

MAPPING UNIT 8

This mapping unit consists of an intense pattern of parallel stream dissections, long narrow talus slopes and/or avalanche tracks.

GEOLOGY

Primarily hard andesite and breccias.

TOPOGRAPHY AND CLIMATE

Slope: 30+ percent
Elevation: 2000-5000 feet

Soil Temperature Regime:

MANAGEMENT

VEGETATION

It supports Site Classes IV and V timber.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soil is very stony and cobbly sands, fine sands, and silty sand.

MAPPING UNIT 9

This mapping unit consists of very steep, eroded, fresh sands and gravels occurring on canyon walls.

GEOLOGY**TOPOGRAPHY AND CLIMATE**

Slope: 60+ percent
Elevation: 3000-5000 feet

Soil Temperature Regime:

MANAGEMENT**VEGETATION**

Void of vegetation.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil:

Associated Mapping Unit Complexes:

<u>Number</u>	<u>Components</u>
None	

SOIL DESCRIPTION

Soil 10 is a very deep soil derived from avalanche debris flow from the May 18, 1980, eruption of Mount St. Helens. Surface soils very gravelly sandy loam. Subsoils are extremely gravelly loamy sand.

Typically, Soil 10 occurs on highly irregular dissected valley fill.

MAPPING UNIT 10

Mapping Unit 10 consists of Soil 10.

GEOLOGY

TOPOGRAPHY AND CLIMATE

Slope: 0 to 55 percent

Elevation: 1200 to 4500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Surface erosion potential is severe.

VEGETATION

The soil is not forested at this time.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: None

Surface Layers: Very gravelly sandy loam, light gray

Subsoil Layer: Extremely gravelly loamy sand, light gray

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Excessively

Surface Soil Permeability Class: Very rapid

Subsoil Permeability Class: Very rapid

U.S.D.A. Soil Classification: Vitrandic udorthents, sandy skeletal, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
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None	
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SOIL DESCRIPTION

Soil 11 is a very deep nonplastic soil derived from ash and outwash. Surface soils are generally thin fine sandy loams. Subsoils are generally very thick, very cobbly sands.

Typically, Soil 11 occurs on broad outwash plains.

MAPPING UNIT 11

Mapping Unit 11 consists of Soil 11 and inclusions of other soils. The most common inclusions are Soils 9 and 29.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the surface.

TOPOGRAPHY AND CLIMATE

Slope: Less than 20 percent

Elevation: 2500 to 5000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Surface erosion potential is slight. Compaction potential and displacement hazard are low to moderate. Nutrient cycling is slow. Regeneration potential is low.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 0-1 inch

Surface Layers: Thin sandy loam, dark yellowish brown

Subsoil Layer: very cobbly sands, dark gray

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Excessively drained

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Very Rapid

U.S.D.A. Soil Classification: Vitrandic udorthents, sandy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:

MU 9 - Remarks: MU 9 is the steep eroding drainage areas that cut through MU 11

Associated Mapping Unit Complexes:

Number	Components
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None

SOIL DESCRIPTION

Soil 12 is a very deep nonplastic soil derived from aeolian materials over river alluvium. Surface soils are moderately thick ashy sandy loams, silt loams and pumice. Subsoils are fresh sands and gravels.

Typically, Soil 12 occurs on smooth gentle slopes and valley bottoms.

MAPPING UNIT 12

Mapping Unit 12 consists of Soil 12 and inclusions of other soils. The most common inclusion is Soil 29.

GEOLOGY

Bedrock consists of andesites or breccias and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 2000 to 3800 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Use is riparian, wildlife, and timber. Erosion potential is slight. Some erosion of stream banks may occur. Compaction potential is low to moderate. Displacement potential is high. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir along with hemlock, Pacific silver fir and western redcedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Ashy sandy loams and pumice, very dark brown

Subsoil Layer: Fresh sands and gravel, dark grayish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well drained

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Rapid

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous over sandy skeletal

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
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None	
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SOIL DESCRIPTION

Soil 13 is a very deep nonplastic to slightly plastic soil derived from till and alluvial deposits. Surface soils are generally thin, ashy, fine sandy loams, or gravelly clay loams. Subsoils are very thick gravelly loams or gravelly clay loams.

Soil 13 occurs primarily in the lower valley of the Cispus River.

MAPPING UNIT 13

Mapping Unit 13 consists of Soil 13 and inclusions of other soils. The most common inclusion is Soil 15.

GEOLOGY

Bedrock is andesite or breccia and generally occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 15 percent

Elevation: 1200 to 2500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

High site timber land. Erosion potential is slight. Nutrient cycling and regeneration potential are high.

VEGETATION

It supports Site Class II Douglas-fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin ashy fine sandy loams and sands, brownish gray

Subsoil Layer: Very thick gravelly loams, dark brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well drained

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to rapid

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
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None

SOIL DESCRIPTION

Soil 14 is a very deep nonplastic soil derived from alluvium. Surface soils are thin silt loams or very fine sandy loams. Subsoils are very thick, very fine sandy loams or loamy sands.

Typically, Soil 14 occurs on gently sloping valley bottoms.

MAPPING UNIT 14

Mapping Unit 14 consists of Soil 14 and inclusions of other soils. The most common inclusions are Soils 1, 21, 93, and 94.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 20 percent

Elevation: 900 to 2500 feet

Soil Temperature Regime: Mesic

MANAGEMENT

Erosion potential is slight. Compaction and displacement potentials are moderate. Nutrient cycling and regeneration potential are high.

VEGETATION

It supports Site Class III and IV Douglas-fir along with cottonwood and willow.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very fine sandy loams and silt loams, dark grayish brown

Subsoil Layer: Very thick, very fine sandy loams, and loamy sands, dark brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Moderately well to well drained

Surface Soil Permeability Class: Moderate to rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic hapludands, medial, mixed, mesic

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
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None	
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SOIL DESCRIPTION

Soil 15 is a very deep nonplastic soil derived from colluvium and till. Surface soils are very thin coarse sands. Subsoils are very thick gravelly loams or gravelly sandy loams.

Typically, Soil 15 occurs on smooth, slightly dissected valley bottoms and toeslopes.

MAPPING UNIT 15

Mapping Unit 15 consists of Soil 15 and inclusions of other soils. The most common inclusions are Soils 13, 16, 17, and 58.

Mapping Unit 15 is similar to Mapping Unit 16 with the exception of landform and inclusions, and Mapping Unit 17 with the exception of Site Class.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1300 to 3800 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is slight. Compaction potential is low to moderate. Displacement potential is moderate. Nutrient cycling is high and regeneration potential is moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir along with hemlock, western redcedar, and alder.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Gravelly loams and gravelly sandy loams, dark brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 16 - Remarks: MU 16 is steep version of MU 15.

MU 17 - Remarks: MU 17 has similar landform but occurs at higher elevations and supports lower site timber.

Associated Mapping Unit Complexes:

Number	Components
1594	50% Unit 15 and 50% Unit 94

SOIL DESCRIPTION

Soil 16 is a very deep nonplastic to slightly plastic soil derived from colluvium and till. Surface soils are very thin coarse sands. Subsoils are very thick and range from gravelly sandy loam to gravelly clay loam.

Typically, Soil 16 occurs on smooth, slightly dissected sideslopes.

MAPPING UNIT 16

Mapping Unit 16 consists of Soil 16 and inclusions of other soils. The most common inclusions are Soils 15, 17, 18, 19, 51, and 41.

Mapping Unit 16 is similar to Mapping Unit 15 with the exception of landform and inclusions, and Mapping Unit 18 with the exception of Site Class.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 30+ percent

Elevation: 1300 to 3800 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling is high and regeneration potential is moderate.

VEGETATION

It supports primarily Site Class III and IV Douglas-fir along with hemlock and western redcedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Gravelly clay loams and gravelly sandy loams, dark yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvivtrands, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 15 - Remarks: MU 15 is gentle version of MU 16.

MU 18 - Remarks: MU 18 has similar landform but occurs at higher elevations and supports lower site timber.

MU 19 - Remarks: MU 19 is a more dissected sideslope with less natural stability.

Associated Mapping Unit Complexes:

Number	Components	Number	Components
1641	60% Unit 16 and 40% Unit 41	4216	60% Unit 42 and 40% Unit 16
1642	60% Unit 16 and 40% Unit 42	5116	60% Unit 51 and 40% Unit 16
1651	60% Unit 16 and 40% Unit 51	5216	60% Unit 52 and 40% Unit 16
4116	60% Unit 41 and 40% Unit 16	9116	60% Unit 91 and 40% Unit 16

SOIL DESCRIPTION

Soil 17 is a very deep nonplastic soil derived from colluvium and till. Surface soils are very thin coarse sands. Subsoils are very thick gravelly loams or gravelly sandy loams.

Typically, Soil 17 occurs on smooth, slightly dissected valley bottoms and toeslopes.

MAPPING UNIT 17

Mapping Unit 17 consists of Soil 17 and inclusions of other soils. The most common inclusions are Soils 15, 16, and 18.

Mapping Unit 17 is similar to Mapping Unit 18 with the exception of landform and inclusions, and Mapping Unit 15 with the exception of Site Class.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent
Elevation: 3000 to 5500 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is slight. Compaction potential is low to moderate. Displacement potential is moderate. Nutrient cycling is moderate and regeneration potential is low to moderate.

VEGETATION

It supports Site Class V Douglas-fir along with hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, gray

Subsoil Layer: Gravelly clay loams and gravelly sandy loams, brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic vitricryands, pumiceous, mixed

This Mapping Unit is similar to Soil:

MU 18 - Remarks: MU 18 is steep version of MU 17.

MU 15 - Remarks: MU 15 has similar landform but occurs at lower elevations and supports higher site timber.

Associated Mapping Unit Complexes:

Number	Components
1795	50% Unit 17 and 50% Unit 95

SOIL DESCRIPTION

Soil 18 is a very deep nonplastic soil derived from colluvium and till. Surface soils are very thin sandy loams or sands. Subsoils are very thick gravelly loams or gravelly sandy loams.

Typically, Soil 18 occurs on smooth to slightly dissected sideslopes.

MAPPING UNIT 18

Mapping Unit 18 consists of Soil 18 and inclusions of other soils. The most common inclusions are Soils 16, 17, 24, 51, 41, 81, and 91.

Mapping Unit 18 is similar to Mapping Unit 17 with the exception of landform and inclusions, and Mapping Unit 16 with the exception of Site Class.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 30+ percent
Elevation: 3000 to 5500 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is slight. Nutrient cycling is moderate and regeneration potential is low to moderate.

VEGETATION

It supports Site Class V Douglas-fir along with hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, gray

Subsoil Layer: Gravelly clay loams and gravelly sandy loams, brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Rapid to moderate

U.S.D.A. Soil Classification: Typic vitricryands, pumiceous, mixed

This Mapping Unit is similar to Soil:

MU 17 - Remarks: MU 17 is gentle version of MU 18.

MU 16 - Remarks: MU 16 has similar landform but occurs at lower elevations and supports higher site timber.

Associated Mapping Unit Complexes:

Number	Components
1841T	60% Unit 18 and 40% Unit 41T
1892	50% Unit 18 and 50% Unit 92
41T18	60% Unit 41T and 40% Unit 18
42T18	60% Unit 42T and 40% Unit 18
51T18	60% Unit 51T and 40% Unit 18

SOIL DESCRIPTION

Soil 19 is a very deep slightly plastic to plastic soil derived from colluvium and till. Surface soils are very thin coarse sands. Subsoils are very thick gravelly loams or gravelly clay loams.

Typically, Soil 19 occurs on uneven sideslopes and in unstable drainages .

MAPPING UNIT 19

Mapping Unit 19 consists of Soil 19 and inclusions of other soils. The most common inclusions are Soils 16, 51, 53, and 57.

GEOLOGY

Bedrock is breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 20 to 80 percent
Elevation: 1200 to 3000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Mass wasting potential is moderate to high. Nutrient cycling and regeneration potential are low to moderate

VEGETATION

It supports Site Class II, III, and IV Douglas-fir along with cedar, hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Very thick gravelly loams and gravelly clay loams, dark yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well to moderately well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous over medial skeletal

This Mapping Unit is similar to Soil:

MU 16 - Remarks: MU 16 is a less dissected sideslope with greater natural stability

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soil 21 is a very deep nonplastic to slightly plastic soil derived from colluvium and till. Surface soils are generally thin gravelly sandy loams. Subsoils are thick gravelly loams or gravelly sandy loams.

Typically, Soil 21 occurs on gentle, smooth, slightly dissected toeslopes and valley bottoms.

MAPPING UNIT 21

Mapping Unit 21 consists of Soil 21 and inclusions of other soils. The most common inclusion is Soil 22.

Mapping Unit 21 is similar to Mapping Unit 22 with the exception of landform and inclusions, and to Mapping Unit 15 with the exception that Mapping Unit 21 does not contain surface ash.

GEOLOGY

Bedrock consists of andesite or breccias and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 2000 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is slight. Displacement potential is moderate. Compaction potential is high. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III to V (predominately IV) Douglas-fir along with hemlock and cedar

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loams, dark brown

Subsoil Layer: Thick gravelly loams and gravelly sandy loams, dark brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic Haplobrepts, medial over loamy, mixed, frigid

This Mapping Unit is similar to Soil:

MU 22 - Remarks: MU 22 is the steep version of MU 21.

MU 15 - Remarks: MU 15 has a surface layer of ash.

Associated Mapping Unit Complexes:

Number	Components
9421	60% Unit 94 and 40% Unit 21

SOIL DESCRIPTION

Soil 22 is a very deep nonplastic to slightly plastic soil derived from colluvium and till. Surface soils are generally thin gravelly sandy loams. Subsoils are thick gravelly loams or gravelly sandy loams.

Typically, Soil 22 occurs on steep, smooth, slightly to somewhat dissected sideslopes on slopes.

MAPPING UNIT 22

Mapping Unit 22 consists of Soil 22 and inclusions of other soils. The most common inclusions are Soils 21, 82, and 82.

Mapping Unit 22 is similar to Mapping Unit 21 with the exception of landform and inclusions, and to Mapping Unit 16 with the exception that Mapping Unit 21 does not contain surface ash.

GEOLOGY

Bedrock consists of hard andesite or breccias and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70 percent
Elevation: 2000 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is slight. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III to V (predominately IV) Douglas-fir along with hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loams, dark brown

Subsoil Layer: Thick gravelly loams and gravelly sandy loams, dark brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic Haplumbrepts, medial over loamy, mixed, frigid

This Mapping Unit is similar to Soil:

MU 21 - Remarks: MU 21 is gentle version of MU 22.

MU 16 - Remarks: MU 16 has a surface layer of ash.

Associated Mapping Unit Complexes:

Number	Components
8122	60% Unit 81 and 40% Unit 22
8222	60% Unit 82 and 40% Unit 22
8322	60% Unit 83 and 40% Unit 22
9122	60% Unit 91 and 40% Unit 22
9222	60% Unit 92 and 40% Unit 22

SOIL DESCRIPTION

Soil 23 is a deep to very deep, slightly plastic to plastic soil derived from volcanic ash, pumice, till and residuum. Surface soils are sandy loam or loamy sand. Subsoils are sandy clay loam or clay loam.

Typically, Soil 23 occurs on gentle, undulating slopes, concave shape with wet spots common.

MAPPING UNIT 23

Mapping Unit 23 consists of Soil 23 and inclusions of other soils. The most common inclusions are Soils 3, 17, 18, and 24.

Mapping Unit 23 is similar to Mapping Unit 24 with the exception of drainage and topography.

GEOLOGY

Bedrock is breccias and generally occurs 9 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 20 percent
Elevation: 2000 to 4500 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is slight. Displacement potential is moderate. Compaction potential is high. Nutrient cycling is moderate. Regeneration potential is low to moderate.

VEGETATION

It supports Site Class IV Douglas-fir with hemlock, true fir, Engelmann spruce and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Sandy loams and loamy sands, dark brown

Subsoil Layer: Sandy clay loam and clay loam, dark yellowish brown

Range of Depth to Bedrock: Greater than 9 feet

Drainage Class: Imperfectly

Surface Soil Permeability Class: Moderate to rapid

Subsoil Permeability Class: Slow

U.S.D.A. Soil Classification: Aquic vitricryands, ashy over medial skeletal

This Mapping Unit is similar to Soil:

MU 24 - Remarks: MU 24 is well drained and is common to steeper slopes or convex shape.

Associated Mapping Unit Complexes:

Number	Components
2324	60% Unit 23 and 40% Unit 24
2423	60% Unit 24 and 40% Unit 23
5923	60% Unit 59 and 40% Unit 23

SOIL DESCRIPTION

Soil 24 is a deep to very deep, slightly plastic to plastic soil derived from volcanic ash and pumice, residuum and till. Surface soils are sandy loam or loamy sand. Subsoils are sandy clay loam or clay loam.

Typically, Soil 24 occurs on gentle (variable shape) uneven benches to moderately steep smooth to somewhat dissected sideslopes.

MAPPING UNIT 24

Mapping Unit 24 consists of Soil 24 and inclusions of other soils. The most common inclusions are Soils 17, 18, and 23.

Mapping Unit 24 is similar to Mapping Unit 23 with the exception that it is on somewhat steeper slopes and is better drained.

GEOLOGY

Bedrock is breccias and generally occurs 9 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 50 percent

Elevation: 2500 to 5000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is slight. Displacement potential is moderate. Compaction potential is high. Nutrient cycling is moderate. Regeneration potential is low to moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock and silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Sandy loams and loamy sands, dark yellowish brown

Subsoil Layer: Sandy clay loam and clay loam, yellowish brown

Range of Depth to Bedrock: Greater than 9 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to rapid

U.S.D.A. Soil Classification: Typic vitricryands, ashy over medial skeletal

This Mapping Unit is similar to Soil:

MU 23 - Remarks: MU 23 has gentle slopes and drainage is imperfect.

Associated Mapping Unit Complexes:

Number	Components
2324	60% Unit 23 and 40% Unit 24
2423	60% Unit 24 and 40% Unit 23
2431	50% Unit 24 and 50% Unit 31
2493	50% Unit 24 and 50% Unit 93

SOIL DESCRIPTION

Soil 25 is a very deep, nonplastic soil derived from volcanic pumice and ash. Surface soils are very thin fine sandy loams or loamy sands. Subsoils are very thick and consist primarily of pumice. Occasional interbeds ranging from fine sandy loam to loamy sand are present.

Typically, Soil 25 occurs on smooth slopes.

MAPPING UNIT 25

Mapping Unit 25 consists of Soil 25 and inclusions of other soils. The most common inclusion is Soil 26.

Mapping Unit 25 is similar to Mapping Unit 26 with the exception of landform and inclusions.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 2400 to 4500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is slight but when water is allowed to concentrate, erosion can be high. Displacement potential is high. Compaction potential is moderate to low. Nutrient cycling is moderate. Regeneration potential is low to moderate.

VEGETATION

It supports Site Class III, IV, and V Douglas-fir along with hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 3 inches

Surface Layers: Very thin fine sandy loam and loamy sand, gray

Subsoil Layer: Thick layers of pumice and ash, light yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Excessive to well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, cindery over medial

This Mapping Unit is similar to Soil:

MU 26 - Remarks: MU 26 is a steep version of MU 25.

Associated Mapping Unit Complexes:

Number	Components
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None	
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SOIL DESCRIPTION

Soil 26 is a very deep, nonplastic soil derived from volcanic pumice and ash. Surface soils are very thin fine sandy loams or loamy sands. Subsoils are very thick and consist primarily of pumice. Occasional interbeds ranging from fine sandy loam to loamy sand are present.

Typically, Soil 26 occurs on steep, smooth, and somewhat dissected sideslopes.

MAPPING UNIT 26

Mapping Unit 26 consists of Soil 26 and inclusions of other soils. The most common inclusion is Soil 25.

Mapping Unit 26 is similar to Mapping Unit 25 the exception of landform and inclusions.

GEOLOGY

Bedrock is andesite or breccia and occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 30+ percent

Elevation: 2100 to 5200 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is slight to moderate but when water is allowed to concentrate, erosion can be high. Nutrient cycling is moderate. Regeneration potential is low to moderate.

VEGETATION

It supports Site Class III, IV, and V Douglas-fir, along with hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 3 inches

Surface Layers: Very thin fine sandy loam and loamy sand, gray

Subsoil Layer: Thick layers of pumice and ash, dark yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Excessive to well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, cindery over medial

This Mapping Unit is similar to Soil:

MU 25 - Remarks: MU 25 is a gentle version of MU 26.

Associated Mapping Unit Complexes:

Number	Components
2640	70% Unit 26 and 30% Unit 40

SOIL DESCRIPTION

Soil 27 is a deep, nonplastic (surface) to plastic (subsoil) soil derived from aeolian and residual materials. Surface soils are ash and pumice. Subsoils are loams and clay loams.

Typically, Soil 27 occurs on gently sloping, smooth to slightly uneven sideslopes.

MAPPING UNIT 27

Mapping Unit 27 consists of Soil 27 and inclusions of other soils. The most common inclusion is Soil 28.

Mapping Unit 27 is similar to Mapping Unit 28 with the exceptions of landform and inclusions.

GEOLOGY

Bedrock consists of moderately hard andesitic breccias and conglomerates.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1200 to 2000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

This soil is one of highest timber sites. Erosion potential is slight but when water is allowed to concentrate, erosion can be high. Displacement potential is high. Compaction potential is moderate to low. Nutrient cycling and regeneration potential are high.

VEGETATION

It supports Site Class II Douglas-fir along with western redcedar, hemlock, and bigleaf maple.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 4 inches

Surface Layers: Thin ash and pumice, light brownish gray

Subsoil Layer: Stratified ash and pumice, light yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udvitrandis, cindery over medial

This Mapping Unit is similar to Soil:
MU 28

Associated Mapping Unit Complexes:

Number	Components
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None	
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SOIL DESCRIPTION

Soil 28 is a deep, nonplastic (surface) to plastic (subsoil) soil derived from aeolian and residual materials. Surface soils are ash and pumice. Subsoils are loams and clay loams.

Typically, Soil 28 occurs in valley bottoms on slopes.

MAPPING UNIT 28

Mapping Unit 28 consists of Soil 28 and inclusions of other soils. The most common inclusions are Soils 3 and 27.

Mapping Unit 28 is similar to Mapping Unit 27 with the exceptions of landform and inclusions.

GEOLOGY

Bedrock consists of moderately hard andesitic breccias and conglomerates.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1200 to 1500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

This soil is one of highest timber sites. Erosion potential is slight but when water is allowed to concentrate, erosion can be high. Displacement potential is high. Compaction potential is moderate to low. Nutrient cycling and regeneration potential are high.

VEGETATION

It supports Site Class I and II Douglas-fir, along with western redcedar and bigleaf maple.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 4 inches

Surface Layers: Thin ash and pumice, light brownish gray

Subsoil Layer: Stratified ash and pumice, light yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Moderately well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udvitrandis, cindery over medial

This Mapping Unit is similar to Soil:
MU 27

Associated Mapping Unit Complexes:

Number	Components
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None	
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SOIL DESCRIPTION

Soil 29 is moderately deep nonplastic to slightly plastic soil derived primarily from aeolian ash with lesser amounts of pumice. Surface soils are thin, ashy fine sandy loams. Subsoils are moderately thick, somewhat stratified, fine sandy loams, loams, silt loams and pumice.

Typically, Soil 29 occurs on gentle smooth ridgetops and flats.

MAPPING UNIT 29

Mapping Unit 29 consists of Soil 29 and inclusions of other soils. The most common inclusions are Soils 12 and 31.

Mapping Unit 29 is similar to Mapping Unit 31 with the exceptions of landform and inclusions.

GEOLOGY

Bedrock consists of hard andesites and andesitic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 3000 to 5000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Displacement potential is high. Compaction potential is low to moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir, along with Pacific silver fir and hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Thin, ashy fine sandy loam, very dark gray

Subsoil Layer: ^{FSL, SIL, L, pumice} Stratified ash and pumice, dark yellowish brown

Range of Depth to Bedrock: 3 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Vitric haplocryands, cindery over medial

This Mapping Unit is similar to Soil:

MU 31 - Remarks: MU 31 is the steeper version of MU 29.

MU 58 - Remarks: MU 58 has a very thin layer of ash and pumice.

MU 34 - Remarks: MU 34 has a thick surface layer of pumice and ash, and is a deeper soil.

Associated Mapping Unit Complexes:

Number	Components
2957	60% Unit 29 and 40% Unit 57 - a questionable complex
3429	60% Unit 34 and 40% Unit 29

SOIL DESCRIPTION

Soil 31 is a moderately deep nonplastic to plastic soil derived primarily from aeolian ash with lesser amounts of pumice. Surface soils are thin ashy fine sandy loams. Subsoils are moderately thick to thick, somewhat stratified, fine sandy loams, loams, silt loams and pumice.

Typically, Soil 31 occurs on steep, smooth to slightly dissected sideslopes.

MAPPING UNIT 31

Mapping Unit 31 consists of Soil 31 and inclusions of other soils. The most common inclusions are Soils 7, 57, 29, and 12.

Mapping Unit 31 is similar to Mapping Unit 29 with the exceptions of landform and inclusions.

GEOLOGY

Bedrock consists of hard andesites and andesitic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 80+ percent

Elevation: 1800 to 5000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Nutrient cycling is moderate and regeneration potential is low to moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir, along with Pacific silver fir, noble fir, and hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Thin, ashy fine sandy loam, very dark grayish brown

Subsoil Layer: Stratified ash and pumice, yellowish brown

Range of Depth to Bedrock: 3 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Vitric haplocryands, cindery over medial

This Mapping Unit is similar to Soil:

MU 29 - Remarks: MU 29 is the gentle version of MU 31.

MU 57 - Remarks: MU 57 is the more unstable version of MU 31.

Associated Mapping Unit Complexes:

Number	Components
1231	50% Unit 12 and 50% Unit 31
3157	60% Unit 31 and 40% Unit 57

SOIL DESCRIPTION

Soil 34 is deep to very deep nonplastic derived from aeolian materials. Surface soils are thin and are dominated by pumice and coarse ash. Subsoils are thick and are dominated by ashy silt loams and ashy loams.

Typically, Soil 34 occurs on gentle undulating ridgetops and sideslopes.

MAPPING UNIT 34

Mapping Unit 34 consists of Soil 34 and inclusions of other soils. The most common inclusions are Soils 36 and 25.

Mapping Unit 34 is similar to Mapping Unit 36 with the exceptions of inclusions and Site Class.

GEOLOGY

Bedrock consists of hard andesites and andesitic breccias and occurs 6 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 2000 to 5000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Displacement potential is high. Compaction potential is moderate. Nutrient cycling is low to moderate while regeneration potential is low.

VEGETATION

It supports Site Class IV and V Douglas-fir, along with Pacific silver fir, hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Thin, ashy fine sandy loam, light brownish gray

Subsoil Layer: Stratified ash and pumice, dark brown

Range of Depth to Bedrock: 3 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Vitric haplocryands, cindery over medial

This Mapping Unit is similar to Soil:

MU 29 - Remarks: MU 29 is a moderately deep soil.

MU 36 - Remarks: MU 36 supports Site Class III DF and may be only moderately deep.

MU 25 - Remarks: MU 25 has a very thick layer of pumice with interlayers of ash.

Associated Mapping Unit Complexes:

Number	Components
3429	60% Unit 34 and 40% Unit 29

SOIL DESCRIPTION

Soil 35 is shallow to deep nonplastic soil derived from volcanic ash and pumice. This soil consists of somewhat stratified layers of ashy fine sandy loam, sandy loam and pumice.

Typically, Soil 35 occurs on steep very dissected sideslopes.

MAPPING UNIT 35

Mapping Unit 35 consists of Soil 35 and inclusions of other soils. The most common inclusions are Soils 56 and 31.

GEOLOGY

Bedrock consists of hard andesites and breccias.

TOPOGRAPHY AND CLIMATE

Slope: 55 to 90 percent

Elevation: 1100 to 4600 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is very severe. Mass wasting potential is moderate. Nutrient cycling is moderate. Regeneration potential is moderate to low.

VEGETATION

It supports Site Class IV and V Douglas-fir, along with hemlock, true fir, and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 3 inches

Surface Layers: Very thin fine sandy loam and loamy sand, very dark grayish brown

Subsoil Layer: Thick layers of pumice and ash, yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Rapid to moderate

U.S.D.A. Soil Classification: Typic udvitrandis, cindery over medial

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
3556	60% Unit 35 and 40% Unit 56

SOIL DESCRIPTION

Soil 36 is a moderately deep to very deep nonplastic derived from aeolian materials. Surface soils are thin and are dominated by pumice and ash. Subsoils are thick and are dominated by ashy silt loams.

Typically, Soil 36 occurs on gentle undulating topography.

MAPPING UNIT 36

Mapping Unit 36 consists of Soil 36 and inclusions of other soils. The most common inclusions are Soils 34 and 37.

Mapping Unit 36 is similar to Mapping Unit 37 with the exceptions of landform and inclusions, and to Mapping Unit 34 with the exceptions of inclusions and Site Class.

GEOLOGY

Bedrock consists of hard andesites and andesitic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent
Elevation: 1200 to 2000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Displacement potential is high. Compaction potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III Douglas-fir along with hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 4 inches

Surface Layers: Thin ash and pumice, dark grayish brown

Subsoil Layer: Stratified ash and pumice, dark brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udvitrandis, cindery over medial

This Mapping Unit is similar to Soil:

MU 37 - Remarks: MU 37 is the steep version of MU 36 and may have Site Class IV DF.

MU 34 - Remarks: MU 34 occurs at higher elevation and supports Site Class IV & V DF. MU 34 is most always very deep.

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soil 37 is moderately deep to very deep nonplastic soil derived from aeolian materials. Surface soils are thin and are dominated by pumice and ash. Subsoils are thick and are dominated by ashy silt loams.

Typically, Soil 37 occurs on steep somewhat uneven sideslopes.

MAPPING UNIT 37

Mapping Unit 37 consists of Soil 37 and inclusions of other soils. The most common inclusion is Soil 36.

Mapping Unit 37 is similar to Mapping Unit 36 with the exceptions of landform and inclusions.

GEOLOGY

Bedrock consists of hard andesites and andesitic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 60+ percent

Elevation: 1200 to 2500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is severe. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir, along with cedar and hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 4 inches

Surface Layers: Thin ash and pumice, yellowish brown

Subsoil Layer: Stratified ash and pumice, dark yellowish brown

Range of Depth to Bedrock: Greater than 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Slow

U.S.D.A. Soil Classification: Typic udvivtrands, cindery over medial

This Mapping Unit is similar to Soil:

MU 36 - Remarks: MU 36 is the gentle version of MU 37.

Associated Mapping Unit Complexes:

Number	Components
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None

SOIL DESCRIPTION

MAPPING UNIT 40

Mapping Unit 40 consists of andesite or basalt rock outcrop and inclusions of soils. The most common inclusions are Soils 6, 7, and 41.

GEOLOGY

The andesite and basalt rock is hard and competent.

TOPOGRAPHY AND CLIMATE

Slope:

Elevation:

Soil Temperature Regime:

MANAGEMENT

VEGETATION

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
2640	70% Unit 26 and 30% Unit 40
4140	70% Unit 41 and 30% Unit 40
41T40	70% Unit 41T and 30% Unit 40
4240	70% Unit 42 and 30% Unit 40
42T40	70% Unit 42T and 30% Unit 40
9140	70% Unit 91 and 30% Unit 40
9240	70% Unit 92 and 30% Unit 40

SOIL DESCRIPTION

Soil 41 is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are very thin coarse sands or loamy sands. Subsoils are thin gravelly loams or gravelly sandy loams.

Typically, Soil 41 occurs on steep smooth slopes.

MAPPING UNIT 41

Mapping Unit 41 consists of Soil 41 and inclusions of other soils. The most common inclusions are Soils 16, 18, and 42.

Mapping Unit 41 is similar to Mapping Unit 42 with the exceptions of landforms and inclusions, to Mapping Unit 31 with the exception of bedrock and inclusions, to Mapping Unit 58 with the exception of landform and inclusions, and to Mapping Units 91 and 92 with the exception of the ash/pumice surface layer and inclusions.

GEOLOGY

Bedrock consists of hard andesite or basalt.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 90 percent
Elevation: 1600 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir, along with hemlock and Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands and loamy sands, brownish gray

Subsoil Layer: Thin gravelly loam and gravelly sandy loams, dark yellowish brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 42 - Remarks: MU 42 is highly dissected.

MU 51 - Remarks: MU 51 has volcanic sediment, tuffs and breccia as its bedrock.

MU 58 - Remarks: MU 58 is the gentle version of MU 41.

MU 91 & 92 - Remarks: These units have no or only a trace of ash or pumice on the surface.

Associated Mapping Unit Complexes:

Number	Components
1641	60% Unit 16 and 40% Unit 41
4116	60% Unit 41 and 40% Unit 16
4140	70% Unit 41 and 30% Unit 40
4151	50% Unit 41 and 50% Unit 51

SOIL DESCRIPTION

Soil 41T is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are very thin coarse sands or loamy sands. Subsoils are thin gravelly loams or gravelly sandy loams.

Typically, Soil 41T occurs on steep smooth slopes.

MAPPING UNIT 41T

Mapping Unit 41T consists of Soil 41T and inclusions of other soils. The most common inclusions are Soils 16, 18, and 42.

Mapping Unit 41T is similar to 42 with the exception of vegetation and landform.

GEOLOGY

Bedrock consists of hard andesite or basalt.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 90 percent

Elevation: 3500 to 5000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low.

VEGETATION

It supports Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands and loamy sands, brownish gray

Subsoil Layer: Thin gravelly loam and gravelly sandy loams, dark yellowish brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic vitricryands, pumiceous

This Mapping Unit is similar to Soil:

MU 42 - Remarks: MU 42 is highly dissected.

MU 51 - Remarks: MU 51 has volcanic sediment, tuffs and breccia as its bedrock.

MU 58 - Remarks: MU 58 is the gentle version of MU 41.

MU 91 & 92 - Remarks: These units have no or only a trace of ash or pumice on the surface.

Associated Mapping Unit Complexes:

Number	Components
1841T	60% Unit 18 and 40% Unit 41T
41T18	60% Unit 41T and 40% Unit 18
41T40	70% Unit 41T and 30% Unit 40

SOIL DESCRIPTION

Soil 42 is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are very thin coarse sands or loamy sands. Subsoils are thin gravelly loams or gravelly sandy loams.

Typically, Soil 42 occurs on steep dissected slopes.

MAPPING UNIT 42

Mapping Unit 42 consists of Soil 42 and inclusions of other soils. The most common inclusions are Soils 16, 18, and 41.

Mapping Unit 42 is similar to Mapping Unit 41 with the exceptions of landforms and inclusions, to Mapping Unit 42T with the exception of elevation and vegetation.

GEOLOGY

Bedrock consists of hard andesites or basalts.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 90 percent

Elevation: 1600 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands and loamy sands, gray brown

Subsoil Layer: Thin gravelly loam and gravelly sandy loams, dark yellowish brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 41 - Remarks: MU 41 has smooth sideslopes.

Associated Mapping Unit Complexes:

Number	Components
1642	60% Unit 16 and 40% Unit 42
4216	60% Unit 42 and 40% Unit 16
4240	70% Unit 42 and 30% Unit 40

SOIL DESCRIPTION

Soil 42T is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are very thin coarse sands or loamy sands. Subsoils are thin gravelly loams or gravelly sandy loams.

Typically, Soil 42T occurs on steep dissected slopes.

MAPPING UNIT 42T

Mapping Unit 42T consists of Soil 42T and inclusions of other soils. The most common inclusions are Soils 18 and 41T.

Mapping Unit 42T is similar to Mapping Unit 41T with the exceptions of landforms and inclusions, to Mapping Unit 42 with the exception of elevation and vegetation.

GEOLOGY

Bedrock consists of hard andesites or basalts.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 90 percent
Elevation: 3500 to 5000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class V Douglas-fir, along with hemlock and Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands and loamy sands, gray brown

Subsoil Layer: Thin gravelly loam and gravelly sandy loams, dark yellowish brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 41T - Remarks: MU 41T has smooth sideslopes.

Associated Mapping Unit Complexes:

Number	Components
42T18	60% Unit 42T and 40% Unit 18
42T40	70% Unit 42T and 30% Unit 40

SOIL DESCRIPTION

Soil 43 is a moderately deep to deep nonplastic to slightly plastic soil derived from aeolian and residual materials. Surface soils are sandy loams. Subsoils include layers of gravelly sandy loams and silty clay loams.

Typically, Soil 20 occurs on gentle smooth sideslopes, terraces and basins.

MAPPING UNIT 43

Mapping Unit 43 consists of Soil 43 and inclusions of other soils. The most common inclusion is Soil 44.

Mapping Unit 43 is similar to Mapping Unit 44 with the exceptions of landform, elevation, range, and inclusions.

GEOLOGY

Bedrock consists of hard, competent, highly fractured andesites and basalts.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 800 to 2000 feet

Soil Temperature Regime: Mesic

MANAGEMENT

Erosion potential is low. Displacement potential is moderate. Compaction potential is high. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir along with hemlock and western redcedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin sandy loams, dark grayish brown

Subsoil Layer: Gravelly sandy loams and silty clay loams, dark yellowish brown

Range of Depth to Bedrock: 3 to 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic hapludands, medial, mixed, mesic

This Mapping Unit is similar to Soil:

MU 44 - Remarks: MU 44 is the steeper version of MU 43.

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soil 44 is a moderately deep to deep nonplastic soil derived from aeolian deposits of ash and some pumice. Surface soils are sandy loams or fine sandy loams. Subsoils are gravelly loams.

Typically, Soil 44 occurs on moderately steep, smooth, slightly dissected slopes.

MAPPING UNIT 44

Mapping Unit 44 consists of Soil 44 and inclusions of other soils. The most common inclusions are Soils 24 and 43.

Mapping Unit 44 is similar to Mapping Unit 43 with the exceptions of landform, elevation, range, and inclusions.

GEOLOGY

Bedrock consists of hard, competent, highly fractured andesite and basalt.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 60 percent

Elevation: 1000 to 3000 feet

Soil Temperature Regime: Mesic

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are high.

VEGETATION

It supports Site Class III and IV Douglas-fir, along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Sandy loams and fine sandy loams, light brown

Subsoil Layer: Gravelly loams, brownish yellowish

Range of Depth to Bedrock: 3 to 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic hapludands, medial, mesic

This Mapping Unit is similar to Soil:

MU 20 - Remarks: MU 20 is the gentle version of MU 44.

Associated Mapping Unit Complexes:

Number	Components
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None	
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SOIL DESCRIPTION

Soil 45 is shallow to moderately deep nonplastic soil derived from residuum and glacial till. Surface soils are very thin sandy loams or loamy sands. Subsoils are thin to moderately thick gravelly loams or gravelly sandy loams.

Typically, Soil 45 occurs on benchy landforms.

MAPPING UNIT 45

Mapping Unit 45 consists of Soil 45 and inclusions of other soils. The most common inclusions are Soils 3 and 46.

GEOLOGY

Bedrock consists of hard and competent andesites, basalts, and breccias.

TOPOGRAPHY AND CLIMATE

Slope: Less than 30 percent

Elevation: 4000 to 6000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Displacement potential is moderate to high. Compaction potential is moderate to low. Nutrient cycling and regeneration potential are low.

VEGETATION

It supports Site Class V Douglas-fir, along with hemlock and Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 4 inches

Surface Layers: Very thin sandy loams and loamy sands, dark brown

Subsoil Layer: Gravelly loams and gravelly sandy loams, dark grayish brown

Range of Depth to Bedrock: 1 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Rapid

U.S.D.A. Soil Classification: Typic vitricryands, pumiceous

This Mapping Unit is similar to Soil: SMU 46 does not support commercial harvest

Associated Mapping Unit Complexes:

Number	Components
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None

SOIL DESCRIPTION

Soil 46 is shallow to moderately deep nonplastic soil derived from residuum and glacial till. Surface soils are very thin loamy sands. Subsoils are thin to moderately thick gravelly loams or gravelly sandy loams.

Typically, Soil 46 occurs on somewhat rough and irregular benchy topography at higher elevations.

MAPPING UNIT 46

Mapping Unit 46 consists of Soil 46 and inclusions of other soils. The most common inclusions are Soils 3 and 45.

GEOLOGY

Bedrock consists of hard and competent andesites, basalts, and breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 4000 to 6000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Displacement potential is moderate to high. Compaction potential is moderate to low. Nutrient cycling and regeneration potential are low.

VEGETATION

Vegetation consists of scattered noncommercial trees and alpine meadows.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 4 inches

Surface Layers: Very thin loamy sands, dark brown

Subsoil Layer: Gravelly loams and gravelly sandy loams, dark grayish brown

Range of Depth to Bedrock: 1 to 6 feet

Drainage Class: Well with local wet spots

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Rapid

U.S.D.A. Soil Classification: Typic vitricryands, pumiceous

This Mapping Unit is similar to Soil: SMU 45 supports commercial timber

Associated Mapping Unit Complexes:

Number	Components
463	60% Unit 46 and 40% Unit 3

SOIL DESCRIPTION**MAPPING UNIT 50**

Mapping Unit 50 consists of pyroclastic rock outcrop and inclusions of soil. The most common inclusions are Soils 6, 7, and 51.

GEOLOGY

The pyroclastic rock outcrop is composed of breccias and volcanic sediments. This rock is generally hard and competent.

TOPOGRAPHY AND CLIMATE

Slope:
Elevation:

Soil Temperature Regime:

MANAGEMENT**VEGETATION****RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL**

Litter:
Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:
Drainage Class:
Surface Soil Permeability Class:
Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil: MU 70

Associated Mapping Unit Complexes:

Number	Components
5150	70% Unit 51 and 30% Unit 50
5250	70% Unit 52 and 30% Unit 50

SOIL DESCRIPTION

Soil 51 is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are very thin coarse sands. Subsoils are thin, gravelly loams or gravelly sandy loams.

Typically, Soil 51 occurs on steep, smooth sideslopes.

MAPPING UNIT 51

Mapping Unit 51 consists of Soil 51 and inclusions of other soils. The most common inclusions are Soils 16, 18, 53, 52, and 41.

Mapping unit 51 is similar to Mapping Unit 52 with the exception of landform and inclusions.

GEOLOGY

Bedrock consists of hard and competent, moderately fractured breccias and volcanic sediments.

TOPOGRAPHY AND CLIMATE

Slope: 30 and 90 percent

Elevation: 1500 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir, along with hemlock, cedar, noble fir, and Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Gravelly loam and gravelly sandy loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 52 - Remarks: MU 52 is highly dissected or an incised drainage.

MU 41 - Remarks: MU 41 has andesite, basalt or hard andesitic breccia as its bedrock.

MU 58 - Remarks: MU 58 is the gentle version of MU 51.

Associated Mapping Unit Complexes:

Number	Components
1651	60% Unit 16 and 40% Unit 51
4151	50% Unit 41 and 50% Unit 51
5116	60% Unit 51 and 40% Unit 16
5130	70% Unit 51 and 30% Unit 30
5351	60% Unit 53 and 40% Unit 51

SOIL DESCRIPTION

Soil 51T is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are very thin coarse sands. Subsoils are thin, gravelly loams or gravelly sandy loams.

Typically, Soil 51T occurs on steep, smooth sideslopes.

MAPPING UNIT 51T

Mapping Unit 51T consists of Soil 51T and inclusions of other soils. The most common inclusions are Soils 18, 41T, and 51.

Mapping unit 51T is similar to Mapping Unit 51 with the exception of vegetation.

GEOLOGY

Bedrock consists of hard and competent, moderately fractured breccias and volcanic sediments.

TOPOGRAPHY AND CLIMATE

Slope: 30 and 90 percent

Elevation: 3500 to 5000 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low.

VEGETATION

It supports noble fir and Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Gravelly loam and gravelly sandy loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic vitricryands, pumiceous

This Mapping Unit is similar to Soil:

MU 52 - Remarks: MU 52 is highly dissected or an incised drainage.

MU 41 - Remarks: MU 41 has andesite, basalt or hard andesitic breccia as its bedrock.

MU 58 - Remarks: MU 58 is the gentle version of MU 51T.

Associated Mapping Unit Complexes:

Number	Components
51T18	60% Unit 51T and 40% Unit 18

SOIL DESCRIPTION

Soil 52 is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are very thin coarse sands. Subsoils are thin, gravelly loams or gravelly sandy loams. Typically, Soil 52 occurs on steep, dissected sideslopes.

MAPPING UNIT 52

Mapping Unit 52 consists of Soil 52 and inclusions of other soils. The most common inclusions are Soils 16, 18, and 51.

Mapping unit 52 is similar to Mapping Unit 51 with the exceptions of landforms and inclusions.

GEOLOGY

Bedrock is composed of hard and competent, moderately fractured breccias and volcanic sediments.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 90+ percent
Elevation: 1500 to 4500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir, along with hemlock, cedar, noble fir, and Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Gravelly loam and gravelly sandy loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 51 - Remarks: MU 51 has slightly dissected to smooth slopes.

Associated Mapping Unit Complexes:

Number	Components
5216	60% Unit 52 and 40% Unit 16
5250	70% Unit 52 and 30% Unit 50

SOIL DESCRIPTION

Soil 53 is a moderately deep to deep, slightly plastic to plastic soil derived from residuum and colluvium. Surface soils are very thin, fine and coarse sands. Subsoils are thick loams and clay loams.

Typically, Soil 53 occurs on somewhat uneven sideslopes.

MAPPING UNIT 53

Mapping Unit 53 consists of Soil 53 and inclusions of other soils. The most common inclusions are Soils 51 and 57.

GEOLOGY

Bedrock is composed of moderately hard and moderately competent breccias and volcanic sediments.

TOPOGRAPHY AND CLIMATE

Slope: 20 and 70 percent
Elevation: 1000 to 3800 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Displacement potential is moderate. Compaction potential is moderate. Mass wasting potential is moderate to high. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir, along with hemlock, and western redcedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Thick loams and clay loams, dark brown

Range of Depth to Bedrock: 3 to 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Moderate

Subsoil Permeability Class: Slow

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 51 - Remarks: MU 51 has experienced less weathering, has shallower soils which can be lighter textured.

MU 57 - Remarks: MU 57 has experienced deeper weathering, has deeper soils which can be heavier textured.

Associated Mapping Unit Complexes:

Number	Components
5351	60% Unit 53 and 40% Unit 51
5357	60% Unit 53 and 40% Unit 57

SOIL DESCRIPTION

Soil 54 is a deep to very deep plastic soil derived from aeolian, residual and colluvial materials. Surface soils are thin ashy sandy loams. Subsoils are thick clays and clay loams.

Typically, Soil 54 occurs on gentle hummocky and landflow topography.

MAPPING UNIT 54

Mapping Unit 54 consists of Soil 54 and inclusions of other soils. The most common inclusions are Soils 56 and 57.

GEOLOGY

Bedrock consists of soft, incompetent, volcanic sediments and breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 60 percent

Elevation: 1200 to 4600 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is slight to moderate. Displacement potential is high. Compaction potential is moderate to low. Mass wasting potential is high. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir along with hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Thin ashy sandy loams, dark brown

Subsoil Layer: Thick clay loam and clays, dark brown

Range of Depth to Bedrock: 6 to 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 59 - Remarks: MU 59 has only a very thin ash surface layer.

Associated Mapping Unit Complexes:

Number	Components
5654	60% Unit 56 and 40% Unit 54
5754	60% Unit 57 and 40% Unit 54

SOIL DESCRIPTION

Soil 56 is a shallow to moderately deep nonplastic to slightly plastic soil, derived from aeolian, residual, and colluvial materials. Surface soils consist of interlayers of coarse sands, loams and pumice. Subsoils consist of very gravelly loams or very gravelly silt loams.

Typically, Soil 56 occurs on steep unstable drainages.

MAPPING UNIT 56

Mapping Unit 56 consists of Soil 56 and inclusions of other soils. The most common inclusions are Soils 57 and 54.

GEOLOGY

Bedrock consists of moderately hard, thinly bedded volcanic sediments that are subject to large mass movements.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70 percent

Elevation: 1000 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate. Mass wasting potential is high.

VEGETATION

It supports Site Class III and IV Douglas-fir, along with hemlock, true fir, and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Thin coarse sands, sandy loams, and pumice, light grayish brown

Subsoil Layer: Gravelly loams and very gravelly silt loams, dark brown

Range of Depth to Bedrock: 6 to 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 52 - Remarks: MU 52 is more stable and generally will have shallower soil depths.

Associated Mapping Unit Complexes:

Number	Components
3556	60% Unit 35 and 40% Unit 56
5654	60% Unit 56 and 40% Unit 54

SOIL DESCRIPTION

Soil 57 is a very deep nonplastic (surface) to plastic (subsoil) soil derived from aeolian, residual and colluvial materials. Surface soils consist of thin to thick interlayers of coarse sands, fine sandy loams, and pumice. Subsoils are generally clay loams.

Typically, Soil 57 occurs on uneven, somewhat dissected toeslopes.

MAPPING UNIT 57

Mapping Unit 57 consists of Soil 57 and inclusions of other soils. The most common inclusions are Soils 56 and 54.

GEOLOGY

Bedrock consists of moderately hard to soft volcanic sediments and breccias, and generally occurs 12 feet or more beneath the soil surface.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 60 percent
Elevation: 1600 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is slight to moderate. Displacement potential is high. Compaction potential is moderate to low. Nutrient cycling potential is moderate. Mass wasting potential is high.

VEGETATION

It supports Site Class III and IV Douglas-fir along with western redcedar, hemlock, and Pacific silver fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Thin coarse sands, sandy loams, and pumice, light yellowish brown

Subsoil Layer: Gravelly clay loams, dark brown

Range of Depth to Bedrock: 6 to 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 53 - Remarks: MU 53 better natural stability, more competent bedrock, soil not as deep.

Associated Mapping Unit Complexes:

Number	Components
5357	60% Unit 53 and 40% Unit 57
3157	60% Unit 31
5754	60% Unit 57

SOIL DESCRIPTION

Soil 58 is a shallow to moderately deep nonplastic soil derived from residuum. Surface soils are very thin sandy loams or loamy sands. Subsoils are gravelly loams or gravelly sandy loams.

Typically, Soil 58 occurs on smooth, benchy sideslopes and toeslopes.

MAPPING UNIT 58

Mapping Unit 58 consists of Soil 58 and inclusions of other soils. The most common inclusion is Soil 15.

GEOLOGY

Bedrock is composed of hard and competent andesites, breccias, or volcanic sediments.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1700 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Displacement and compaction potential are moderate. Nutrient cycling and regeneration potential is moderate.

VEGETATION

It supports predominately Site Class IV (some Site Class III locally) Douglas-fir along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Very thin coarse sands, light brownish gray

Subsoil Layer: Gravelly loam and gravelly sandy loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil:

MU 51 - Remarks: MU 51 is the steep version of MU 58

Associated Mapping Unit Complexes:

Number	Components
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None

SOIL DESCRIPTION

Soil 59 is a deep to very deep, slightly plastic to plastic soil derived from aeolian, residual, and colluvial materials. Surface soils are fine sandy loams or sandy loams. Subsoils are clay loams and clays.

Typically, Soil 59 occurs on gentle to steep, hummocky, slump and landflow topography.

MAPPING UNIT 59

Mapping Unit 59 consists of Soil 59 and inclusions of other soils. The most common inclusions are Soils 23, 24, and 57.

GEOLOGY

Bedrock is composed of soft, incompetent, highly fractured volcanic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 50 percent

Elevation: 2000 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Displacement potential is moderate. Compaction potential is moderate to high. Nutrient cycling and regeneration potential is moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir, along with hemlock, Pacific silver fir, and western redcedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 2 to 3 inches

Surface Layers: Thin ashy sandy loams, dark brown

Subsoil Layer: Thick clay loam and clays, dark brown

Range of Depth to Bedrock: 6 to 12 feet

Drainage Class: Imperfectly

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udvitrandis, pumiceous, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
5923	60% Unit 59 and 40% Unit 23

SOIL DESCRIPTION**MAPPING UNIT 70**

Mapping Unit 70 consists of volcanic sediment bedrock and inclusions of Soils 71, 72, and 73.

GEOLOGY

The rock outcrop of volcanic and marine sediments.

TOPOGRAPHY AND CLIMATE

Slope:

Elevation:

Soil Temperature Regime:

MANAGEMENT**VEGETATION****RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL**

Litter:

Surface Layers:

Subsoil Layer:

Range of Depth to Bedrock:

Drainage Class:

Surface Soil Permeability Class:

Subsoil Permeability Class:

U.S.D.A. Soil Classification:

This Mapping Unit is similar to Soil: MU 50

Associated Mapping Unit Complexes:

Number	Components
7170	70% Unit 71 and 30% Unit 70
7270	70% Unit 72 and 30% Unit 70

SOIL DESCRIPTION

Soil 71 is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are thin gravelly sandy loams. Subsoils and thin gravelly loams.

Typically, Soil 71 occurs on steep, slightly dissected sideslopes.

MAPPING UNIT 71

Mapping Unit 71 consists of Soil 71 and inclusions of other soils. The most common inclusions are Soils 72, 73, and 75.

Mapping Unit 71 is similar to Mapping Unit 72 with the exception of landform and inclusions.

GEOLOGY

Bedrock consists of hard to moderately hard volcanic breccias or marine sedimentary rock.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70+ percent

Elevation: 1000 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, very dark grayish brown

Subsoil Layer: Thin gravelly loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udorthents, ashy over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
7122	60% Unit 71 and 40% Unit 72
7173	50% Unit 71 and 50% Unit 73

SOIL DESCRIPTION

Soil 72 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium. Soils are gravelly loams or gravelly sandy loams.

Typically, Soil 72 occurs on steep dissected sideslopes.

MAPPING UNIT 72

Mapping Unit 72 consists of Soil 72 and inclusions of other soils. The most common inclusions are Soils 22, 71, 73, 75, and 77.

Mapping Unit 72 is similar to Mapping Unit 70 with the exception of landform and inclusions.

GEOLOGY

Bedrock consists of hard to moderately hard volcanic breccias or marine sedimentary rock.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70+ percent

Elevation: 1500 to 4500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, dark yellowish brown

Subsoil Layer: Thin gravelly loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Typic udorthents, ashy over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:
MU 71 - MU 72 has dissected side slopes

Associated Mapping Unit Complexes:

Number	Components
7222	60% Unit 72 and 40% Unit 22
7270	70% Unit 72 and 30% Unit 70
7273	60% Unit 72 and 40% Unit 73
7274	60% Unit 72 and 40% Unit 74
7277	60% Unit 72 and 40% Unit 77

SOIL DESCRIPTION

Soil 73 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium. Surface soils are thin generally nongravelly to gravelly loam or silt loam. Subsoils thin to thick nongravelly to gravelly loam, silt loam, clay loam, or sandy clay.

Typically, Soil 73 occurs on moderately steep to steep even to somewhat uneven smooth to slightly dissected toeslopes and sideslopes.

MAPPING UNIT 73

Mapping Unit 73 consists of Soil 73 and inclusions of other soils. The most common inclusions are Soils 71, 72, and 77.

GEOLOGY

Bedrock consists of soft to moderately hard volcanic breccias or marine sedimentary rock.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70 percent
Elevation: 800 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are moderate. Mass wasting potential is moderate to low.

VEGETATION

It supports Site Class III and IV Douglas-fir along with hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, brown

Subsoil Layer: Thin to thick gravelly loam, silt loam, clay loam, and sandy clay, dark brown

Range of Depth to Bedrock: 3 to 12 feet

Drainage Class: Well to moderately well

Surface Soil Permeability Class: Rapid to moderate

Subsoil Permeability Class: Slow

U.S.D.A. Soil Classification: Andic haplumbrepts, ashy over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
7173	50% Unit 71 and 50% Unit 73
7273	60% Unit 72 and 40% Unit 73
7322	60% Unit 73 and 40% Unit 22
7377	60% Unit 73 and 40% Unit 77

SOIL DESCRIPTION

Soil 74 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium with a thin surface of ash and pumice. Surface soils are fine sandy loams or loams. Subsoils are loams.

Typically, Soil 74 occurs on moderately steep to steep, smooth sideslopes.

MAPPING UNIT 74

Mapping Unit 74 consists of Soil 74 and inclusions of other soils. The most common inclusions are Soils 71 and 73.

Mapping Unit 74 is similar to Mapping Unit 73 with the exception of Site Class and vegetative differences.

GEOLOGY

Bedrock consists of soft to moderately hard volcanic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70 percent

Elevation: 3000 to 4500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low. Mass wasting potential is moderate to low.

VEGETATION

It supports Site Class V and IV Douglas-fir along with Pacific silver fir and hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Fine sandy loam or loams, dark yellowish brown

Subsoil Layer: Loams, dark brown

Range of Depth to Bedrock: 2 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, ashy over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
7274	60% Unit 72 and 40% Unit 74

SOIL DESCRIPTION

Soil 75 is a shallow to moderately deep nonplastic to slightly plastic soil derived from residuum. Surface soils are very thin to thin nongravelly to gravelly loamy sand, sandy loam or loam. Subsoils are thin to moderately thick gravelly loam or sandy loam.

Typically, Soil 75 occurs on gentle, even ridgetops and benches.

MAPPING UNIT 75

Mapping Unit 75 consists of Soil 75 and inclusions of other soils. The most common inclusion is Soil 71.

GEOLOGY

Bedrock consists of hard to moderately hard volcanic sediments.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1000 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion, compaction, and displacement potentials are moderate. Nutrient cycling and regeneration potential are moderate to high.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, dark brown

Subsoil Layer: Thin gravelly loams, yellowish brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Typic udorthents, ashy over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

<u>Number</u>	<u>Components</u>
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None

SOIL DESCRIPTION

Soil 77 is a moderately deep to deep slightly plastic to plastic soil derived from residuum and colluvium. Surface soils are loams. Subsoils are clay loams.

Typically, Soil 77 occurs on steep, uneven and/or dissected landforms on slopes.

MAPPING UNIT 77

Mapping Unit 77 consists of Soil 77 and inclusions of other soils. The most common inclusions are Soils 71, 72, and 73.

GEOLOGY

Bedrock consists of soft to moderately hard volcanic breccias and sediments.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 60+ percent

Elevation: 1500 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Mass wasting potential is high. Nutrient cycling and regeneration potential are moderate to high.

VEGETATION

It supports Site Class III and IV Douglas-fir along with hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, brown

Subsoil Layer: Thin to thick gravelly loam, silt loam, clay loam, and sandy clay, light brown

Range of Depth to Bedrock: 3 to 12 feet

Drainage Class: Moderately well

Surface Soil Permeability Class: Rapid to moderate

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Andic haplumbrepts, ashy over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
7377	60% Unit 73 and 40% Unit 77

SOIL DESCRIPTION

Soil 81 is a shallow nonplastic soil derived from residuum and colluvium. Surface soils are thin gravelly sandy loams. Subsoils are thin gravelly loams.

Typically, Soil 81 occurs on steep, slightly dissected sideslopes.

MAPPING UNIT 81

Mapping Unit 81 consists of Soil 81 and inclusions of other soils. The most common inclusions are Soils 82, 83, and 85.

Mapping Unit 81 is similar to Mapping Unit 82 with the exception of landform and inclusions, and to Mapping Unit 51 with the exception that Mapping Unit 81 does not contain surface ash

GEOLOGY

Bedrock consists of hard to moderately hard volcanic breccias or sedimentary rock.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70+ percent

Elevation: 1000 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low to moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, very dark grayish brown

Subsoil Layer: Thin gravelly loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:

MU 82 - Remarks: MU 82 is the dissected. version of MU 81.

MU 51 - Remarks: MU 51 has a surface layer of ash.

MU 85 - Remarks: MU 85 is the gentle version of MU 81.

Associated Mapping Unit Complexes:

Number	Components
5681	50% Unit 56 and 50% Unit 81
8122	60% Unit 81 and 40% Unit 22
8150	70% Unit 81 and 30% Unit 50
8183	50% Unit 81 and 50% Unit 83
8184	50% Unit 81 and 50% Unit 84
8191	50% Unit 81 and 50% Unit 91

SOIL DESCRIPTION

Soil 82 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium. Soils are gravelly loams or gravelly sandy loams.

Typically, Soil 82 occurs on steep, dissected sideslopes.

MAPPING UNIT 82

Mapping Unit 82 consists of Soil 82 and inclusions of other soils. The most common inclusions are Soils 22, 81, 83, 85, and 87.

Mapping Unit 82 is similar to Mapping Unit 81 with the exception of landform and inclusions, and to Mapping Unit 52 with the exception that Mapping Unit 82 does not contain surface ash.

GEOLOGY

Bedrock consists of hard to moderately hard volcanic breccias or sedimentary rock.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70+ percent

Elevation: 1500 to 4500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low to moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock and true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, dark yellowish brown

Subsoil Layer: Thin gravelly loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:

MU 81 - Remarks: MU 81 has few drainages.

MU 52 - Remarks: MU 52 has a surface layer of ash.

MU 85 - Remarks: MU 85 is moderately stable with 4' of soil.

Associated Mapping Unit Complexes:

Number	Components
8222	60% Unit 82 and 40% Unit 22
8250	70% Unit 82 and 30% Unit 50
8283	60% Unit 82 and 40% Unit 83
8284	60% Unit 82 and 40% Unit 84
8287	60% Unit 82 and 40% Unit 87
8288	60% Unit 82 and 40% Unit 88

SOIL DESCRIPTION

Soil 83 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium. Surface soils are thin generally nongravelly to gravelly loam or silt loam. Subsoils are thin to thick nongravelly to gravelly loam, silt loam, clay loam, or sandy clay.

Typically, Soil 83 occurs on moderately steep to steep even to somewhat uneven smooth to slightly dissected toeslopes and sideslopes.

MAPPING UNIT 83

Mapping Unit 83 consists of Soil 83 and inclusions of other soils. The most common inclusions are Soils 81, 82, 84, and 87.

Mapping Unit 83 is similar to Mapping Unit 84 with the exception of Site class and vegetative differences.

GEOLOGY

Bedrock consists of hard to moderately hard volcanic breccias and sedimentary rocks.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70 percent

Elevation: 800 to 3500

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low to moderate.

VEGETATION

It supports Site Classes III and IV Douglas-fir along with hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin nongravelly loam and silt loam, dark brown

Subsoil Layer: Thin to thick gravelly loam, silt loam, clay loam, and sandy clay, dark brown

Range of Depth to Bedrock: 3 to 12 feet

Drainage Class: Well to moderately well

Surface Soil Permeability Class: Rapid to moderate

Subsoil Permeability Class: Slow

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over clayey, mixed, frigid

This Mapping Unit is similar to Soil:

MU 84 - Remarks: MU 84 is at higher elevations and supports lower site timber.

Associated Mapping Unit Complexes:

Number	Components
8183	60% Unit 81 and 40% Unit 83
8283	60% Unit 82 and 40% Unit 83
8322	60% Unit 83 and 40% Unit 22
8387	60% Unit 83 and 40% Unit 87

SOIL DESCRIPTION

Soil 84 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium. Surface soils are fine sandy loams or loams. Subsoils are loams.

Typically, Soil 84 occurs on moderately steep to steep, smooth sideslopes.

MAPPING UNIT 84

Mapping Unit 84 consists of Soil 84 and inclusions of other soils. The most common inclusions are Soils 81 and 83.

Mapping Unit 84 is similar to Mapping Unit 83 with the exception of Site Class and vegetative differences.

GEOLOGY

Bedrock consists of soft to moderately hard volcanic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70 percent

Elevation: 3000 to 4500 feet

Soil Temperature Regime: **Cryic**

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low.

VEGETATION

It supports Site Class V and IV Douglas-fir along with Pacific silver fir and hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Sandy loam, dark yellowish brown

Subsoil Layer: Loams, dark brown

Range of Depth to Bedrock: 2 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic cryumbrepts, medial over loamy skeletal, mixed

This Mapping Unit is similar to Soil:

MU 83 - Remarks: MU 83 occurs at lower elevations and supports higher site timber.

Associated Mapping Unit Complexes:

Number	Components
8184	50% Unit 81 and 50% Unit 84
8284	60% Unit 82 and 40% Unit 84
9284	60% Unit 92 and 40% Unit 84

SOIL DESCRIPTION

Soil 85 is a shallow to moderately deep nonplastic to slightly plastic soil derived from residuum. Surface soils are very thin to thin nongravelly to gravelly loamy sand, sandy loam or loam. Subsoils are thin to moderately thick gravelly loam or sandy loam.

Typically, Soil 85 occurs on gently, even ridgetops and benches.

MAPPING UNIT 85

Mapping Unit 85 consists of Soil 85 and inclusions of other soils. The most common inclusions is Soil 81.

GEOLOGY

Bedrock consists of hard to moderately hard volcanic sediments.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1000 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion, compaction, and displacement potentials are moderate. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class IV and V Douglas-fir along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, dark brown

Subsoil Layer: Thin gravelly loams, yellowish brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:

MU 58 - Remarks: MU 58 has a surface layer of ash and pumice.

MU 81 - Remarks: MU 81 is the steep version of MU 85.

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soil 87 is moderately deep to deep slightly plastic to plastic soil derived from residuum and colluvium. Surface soils are loams. Subsoils are clay loams.

Typically, Soil 87 occurs on steep, uneven and/or dissected landforms.

MAPPING UNIT 87

Mapping Unit 87 consists of Soil 87 and inclusions of other soils. The most common inclusions are Soils 81, 82, and 83.

GEOLOGY

Bedrock consists of soft to moderately hard volcanic breccias and sediments.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 60+ percent
Elevation: 1500 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Mass wasting potential is high. Nutrient cycling and regeneration potential are moderate to high.

VEGETATION

It supports Site Class III and IV Douglas-fir along with hemlock and cedar.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin nongravelly loam and silt loam, brown

Subsoil Layer: Thin to thick gravelly loam, silt loam, clay loam, and sandy clay, light brown

Range of Depth to Bedrock: 3 to 12 feet

Drainage Class: Moderately well

Surface Soil Permeability Class: Rapid to moderate

Subsoil Permeability Class: Moderate to slow

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over clayey, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
8287	60% Unit 82 and 40% Unit 87
8387	60% Unit 83 and 40% Unit 87

SOIL DESCRIPTION

Soil 88 is moderately deep to deep nonplastic to slightly plastic soil derived from residuum. Surface soils are thin loams. Subsoils are moderately thick to thick loam to clay loam.

Typically, Soil 88 occurs on gentle even to somewhat uneven benches or toeslopes.

MAPPING UNIT 88

Mapping Unit 88 consists of Soil 88 and inclusions of other soils. The most common inclusions are Soils 14, 58, and 22.

GEOLOGY

Bedrock consists of moderately hard volcanic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1000 to 3500 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Displacement potential is moderate. Compaction potential is moderate to high. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports predominately Site Class III and IV Douglas-fir along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin loam, dark brown

Subsoil Layer: Moderately thick to thick loam to clay loam, yellowish brown

Range of Depth to Bedrock: 4 to 12 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over clayey, mixed, frigid

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soil 89 is a deep to very deep plastic soil derived from residuum. Surface soils are clay loams. Subsoils are very gravelly clay loams to very gravelly sandy clay loams.

Typically, Soil 89 occurs on gentle, uneven toeslopes.

MAPPING UNIT 89

Mapping Unit 89 consists of Soil 89 and inclusions of other soils.

GEOLOGY

Bedrock consists of soft volcanic breccias.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 1000 to 2500 feet

Soil Temperature Regime: Mesic

MANAGEMENT

Surface erosion and displacement potential are low. Mass wasting and compaction potential are high. Nutrient cycling and regeneration potential are moderate.

VEGETATION

It supports Site Class III and IV Douglas-fir along with red alder.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Clay loam, dark brown

Subsoil Layer: Very gravelly clay loam and very gravelly sandy clay loam, dark grayish brown

Range of Depth to Bedrock: 8 to 12 feet

Drainage Class: Imperfectly

Surface Soil Permeability Class: Moderate to slow

Subsoil Permeability Class: Slow

U.S.D.A. Soil Classification: Aquic hapludolls, fine, montmorillontic, mixed, mesic

This Mapping Unit is similar to Soil: None

Associated Mapping Unit Complexes:

Number	Components
None	

SOIL DESCRIPTION

Soil 91 is a shallow nonplastic soil derived from residuum and colluvium. Soils range from loam to sandy loam.

Typically, Soil 91 occurs on steep, somewhat dissected sideslopes.

MAPPING UNIT 91

Mapping Unit 91 consists of Soil 91 and inclusions of other soils. The most common inclusions are Soils 40, 41, 22, 81, 92, and 94.

Mapping Unit 91 is similar to Mapping Unit 94 with the exception of topography, and Mapping Unit 92 with the exception of Site Class and other vegetative differences associated with elevation.

GEOLOGY

Bedrock consists of hard andesites.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 60+ percent
Elevation: 1600 to 3200 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low to moderate.

VEGETATION

It supports Site Class IV Douglas-fir along with hemlock.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, dark brown

Subsoil Layer: Thin gravelly loams, dark brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:

MU 94 - Remarks: MU 94 is the gentle version of MU 91.

MU 92 - Remarks: MU 92 occurs at higher elevations and supports lower site class timber.

Associated Mapping Unit Complexes:

Number	Components
8191	50% Unit 81 and 50% Unit 91
9116	60% Unit 91 and 40% Unit 16
9122	60% Unit 91 and 40% Unit 22
9140	70% Unit 91 and 30% Unit 40

SOIL DESCRIPTION

Soil 92 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium. Surface soils are gravelly loam. Subsoils are cobbly sandy loam.

Typically, Soil 92 occurs on steep sideslopes.

MAPPING UNIT 92

Mapping Unit 92 consists of Soil 92 and inclusions of other soils. The most common inclusions are Soils 40, 91, and 95.

Mapping Unit 92 is similar to Mapping Unit 91 with the exception of inclusions, elevation and Site Class.

GEOLOGY

Bedrock consists of hard andesites or basalts.

TOPOGRAPHY AND CLIMATE

Slope: 30 to 70 percent

Elevation: 3000 to 4700 feet

Soil Temperature Regime: Cryic

MANAGEMENT

Erosion potential is moderate. Nutrient cycling and regeneration potential are low.

VEGETATION

It supports Site Class V Douglas-fir along with true fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Sandy loam, very dark brown

Subsoil Layer: Loams, dark brown

Range of Depth to Bedrock: 2 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic cryumbrepts, medial over loamy skeletal, mixed

This Mapping Unit is similar to Soil:

MU 95 - Remarks: MU 95 is the gentle version of MU 92.

MU 91 - Remarks: MU 91 occurs at lower elevations and supports higher site class timber.

Associated Mapping Unit Complexes:

Number	Components
1892	50% Unit 18 and 50% Unit 92
9240	70% Unit 92 and 30% Unit 40

SOIL DESCRIPTION

Soil 93 is a shallow to moderately deep nonplastic soil derived from aeolian cinders and ash. Surface soils are sandy loams. Subsoils are fine sandy loams or sandy loams.

Typically, Soil 93 occurs on smooth gentle sideslopes and terraces.

MAPPING UNIT 93

Mapping Unit 93 consists of Soil 93 and inclusions of other soils. The most common inclusions are Soils 14 and 94.

Mapping Unit 93 is similar to Mapping Unit 94 with the exception of inclusions, slope range and vegetation.

GEOLOGY

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent
Elevation: 2500 to 4000 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion and displacement potential are moderate. Compaction potential is high. Nutrient cycling and regeneration potential are low to moderate.

VEGETATION

It supports Site Class III and IV ponderosa pine along with Douglas-fir.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, brown

Subsoil Layer: Thin gravelly loams, yellowish brown

Range of Depth to Bedrock: 1 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:

MU 94 - Remarks: MU 94 supports a mixed stand of timber.

Associated Mapping Unit Complexes:

Number	Components
2493	50% Unit 24 and 50% Unit 93

SOIL DESCRIPTION

Soil 94 is a shallow to moderately deep nonplastic soil derived from aeolian cinders and ash. Surface soils are sandy loams. Subsoils are cobbly sandy loams.

Typically, Soil 94 occurs on gentle sideslopes and terraces.

MAPPING UNIT 94

Mapping Unit 94 consists of Soil 94 and inclusions of other soils. The most common inclusions are Soils 15, 18, 23, 24, 91, and 93.

Mapping Unit 94 is similar to Mapping Unit 91 with the exceptions of inclusions and topography.

GEOLOGY

Bedrock consists of hard andesites or basalts.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 2000 to 3300 feet

Soil Temperature Regime: Frigid

MANAGEMENT

Erosion and displacement potential are moderate. Compaction potential is high. Nutrient cycling and regeneration potential are low to moderate.

VEGETATION

It supports Site Class IV Douglas-fir along with grand fir, pacific silver fir, hemlock and larch.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Thin gravelly sandy loam, brown

Subsoil Layer: Thin gravelly loams, yellowish brown

Range of Depth to Bedrock: 1 to 3 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic haplumbrepts, medial over loamy skeletal, mixed, frigid

This Mapping Unit is similar to Soil:

MU 91 - Remarks: MU 91 is the steep version of MU 94.

MU 93 - Remarks: MU 93 supports P. pine with DF.

MU 95 - Remarks: MU 95 occurs at higher elevations and supports lower site class timber.

Associated Mapping Unit Complexes:

Number	Components
1594	50% Unit 15 and 50% Unit 94

SOIL DESCRIPTION

Soil 95 is a shallow to moderately deep nonplastic soil derived from residuum and colluvium. Surface soils are gravelly loams. Subsoils are cobbly sandy loams.

Typically, Soil 95 occurs on gentle ridgetops and benches.

MAPPING UNIT 95

Mapping Unit 95 consists of Soil 95 and inclusions of other soils. The most common inclusions are Soils 92 and 94.

Mapping Unit 95 is similar to Mapping Unit 94 with the exception of inclusions, elevation and Site Class, and Mapping Unit 92 with the exception of landform and inclusions.

GEOLOGY

Bedrock consists of hard andesites or basalts.

TOPOGRAPHY AND CLIMATE

Slope: 0 to 30 percent

Elevation: 3200 to 4400 feet

Soil Temperature Regime: *Cryic*

MANAGEMENT

Erosion and displacement potential are moderate. Compaction potential is high. Nutrient cycling and regeneration potential are low.

VEGETATION

It supports Site Class V Douglas-fir along with true firs.

RANGE OF SOIL PROFILE CHARACTERISTICS OF SOIL

Litter: 1 to 2 inches

Surface Layers: Sandy loam, very dark brown

Subsoil Layer: Loams, dark brown

Range of Depth to Bedrock: 2 to 6 feet

Drainage Class: Well

Surface Soil Permeability Class: Rapid

Subsoil Permeability Class: Moderate

U.S.D.A. Soil Classification: Andic cryumbrepts, medial over loamy skeletal, mixed

This Mapping Unit is similar to Soil:

MU 92- Remarks: MU 92 is the steep version of MU 95.

MU 94 - Remarks: MU 94 occurs at lower elevations and supports *higher* site class timber.

Associated Mapping Unit Complexes:

Number	Components
1795	50% Unit 17 and 50% Unit 95

**MAPPING UNIT CHARACTERISTICS, FEATURES AND
QUALITIES DEFINITIONS AND TABLE**

MAPPING UNIT CHARACTERISTICS, FEATURES, AND QUALITIES

These terms are found in the Table of Some Mapping Unit Characteristics, Features, and Qualities. They describe properties of the mapping unit that result from soil characteristics, bedrock characteristics, topography and site.

Infiltration rate - Rate of entry of water into soil surface. The rate is dependent upon the type of surface soil texture, rock fragment content, structure, porosity, bulk density, and organic matter content.

Infiltration Rate Classes

Slow - Water stands on surface for long periods. Soils are fine-textured, poorly aggregated and puddle easily.

Moderate - Water enters soil at commensurate rates of normal rainfall or water application. Water may pond for short periods (a few days) following very intensive rainfall. Soils are medium textured and well aggregated.

Rapid - Water rarely ponds, enters soil surface very rapidly. Soils are coarse textured, porous, loose and usually single-grained.

Drainage class 1/ - The rapidity and extent of removal of water from the soil. Based on soil permeability, infiltration, internal drainage and topographic position.

Poorly drained - Water table at or near the surface a considerable part of the time. Soils of this class usually occupy level or depressed sites and are frequently ponded. Water removed so slowly that soil remains wet almost all the time.

Imperfectly drained - Water removed so slowly that the soil remains wet for significant periods, but not all the time.

Moderately well drained - Soils remain wet for a period somewhat longer (up to one month) than

the wet season; may be due in part to a slowly permeable layer, high water table or lateral seepage.

Well drained - Water is removed from soil readily and these soils are saturated only during the wet season for short periods.

Excessively drained - Water is removed from soil rapidly and these soils are rarely ever saturated. Commonly, these soils are coarse-textured or shallow, stony and/or occur on steep slopes.

Surface Drainage Intensity and Pattern - Number of drainage miles per square mile and dominant drainage pattern.

Intensity Classes	Other Commonly Used Terms
Few - 0 to 1 drainage miles per a square mile	smooth or nondissected
Common - 1 to 3 drainage miles per square mile	smooth or nondissected
Many - 3 to 5 drainage miles per square mile	slightly dissected
Abundant - greater than 5 drainage miles per square mile	dissected

Patterns

Dendritic - Drainages branch in random directions.

Parallel - Drainages are relatively parallel.

Productivity - Combined evaluation of measured and observed production of timber and forage types. Site classes are to be used for timber types and range condition ratings for range types.

Site Class - Class limits correspond to height (site index) of Douglas-fir at 100 years.

Class I - greater than 185 S.I.

Class II - 185 S.I. to 155 S.I.

Class III - 155 S.I. to 125 S.I.

Class IV - 125 S.I. to 95 S.I.

Class V - less than 95 S.I.

Fertility - Estimated inherent soil fertility and availability of plant nutrients. This rating is derived by correlating measured productivity with soil factors such as texture, pH, color and organic matter content.

High - These soils generally have medium to fine texture, dark surface colors; are slightly acid to slightly alkaline and have abundant incorporated organic matter. Nutrient quantities are adequate

and readily available. Productivity is high as evidenced by timber site classes of I and II.

Moderate - These soils generally have one or more soil factors that limit nutrient quantity and/or availability. Productivity is moderate as evidenced by timber site classes of low II to high IV.

Low - These soils generally have several factors that are limiting. They may be coarse textured, strongly acid or strongly alkaline, and lacking in sufficient organic matter. Nutrient quantity and/or availability is seriously limiting. Productivity is low as evidenced by timber site class IV and V.

Landform - Refers to the shape and configuration of a specific, identifiable part of the landscape common to the mapping unit.

Slope - Range of slope of mapping unit.

Elevation - Altitude above mean sea level expressed in feet.

SOIL CHARACTERISTICS, FEATURES, AND QUALITIES

Soil Mapping No.	Infiltration rate	Drainage Class	Surface Drainage Intensity and Pattern	Prod. Site Class	Fertility	Landform	Slope	Elevation
1	Rapid	Well	Few, Parallel	N/A	Low	Alluvial, terrace & outwash plain	0-20	1000-4000
2	Rapid	Well	Few, Parallel	N/A	Low	Lava flow	0-20	1000-6000
3	Moderate	Imperfectly to poorly	Common, Dendritic	N/A	Moderate	Depressional wet meadows	0-15	1000-6000
4	Variable	Well	Common, Dendritic	N/A	N/A	Mountaintops above timberline	30-100+	5000-13,000
5	Rapid	Well	Few, Parallel	IV & V	Low	Volcanic cinder cones	20-50	2000-5000
6	Rapid	Well	Common, Dendritic	N/A	Low	Rugged ridgetop and upper sideslopes	10-90+	3000-5000
7	Rapid	Well	Common, Dendritic	IV	Low	Rugged ridgetops and upper sideslopes	50-90	3000-5000
8	Rapid	Well	Abundant, Parallel	IV & V	Low	Steep, highly dissected sideslopes	60-100+	2500-5000
	Rapid	Excessively	Many, Dendritic	N/A	Low	Steep canyon walls	70-100+	3000-6500
10	Rapid	Excessively	Many, Dendritic	N/A	Low	Uneven and unstable valley fill material from Mount St. Helens landslide	0-55	1200-4500
11	Rapid	Excessively	Few to common, Parallel & Dendritic	IV & V	Low	Outwash plain	0-20	2500-5000
12	Rapid	Well	Common to many, Dendritic	III & IV	Low to Moderate	Smooth, gentle slopes and valley bottoms	0-30	2000-3800
13	Rapid	Well	Few, Parallel & Dendritic	II	High	Terrace	0-15	1200-2500
14	Rapid	Well to Moderately well	Many to Abundant, Dendritic	III & IV	Moderate	Valley bottoms	0-20	900-2500
15	Rapid	Well	Few to common, Dendritic	III & IV	Moderate	Valley bottoms and toeslopes	0-30	1300-3800
16	Rapid	Well	Common, Dendritic	III & IV	Moderately	Steep, smooth, slightly dissected sideslopes	30+	1300-3800
17	Rapid	Well	Few to common, Dendritic	V	Low	Higher elevation, cirque basins and glacial flats	0-30	3000-5500
18	Rapid	Well	Common, Dendritic	V	Low	Higher elevation, glacial sideslopes, uneven sideslopes	30+	3000-5500

Soil Mapping No.	Infiltration rate	Drainage Class	Surface Drainage Intensity and Pattern	Prod. Site Class	Fertility	Landform	Slope	Elevation
19	Rapid	Well to moderately well	Common, Dendritic	II, III, IV	Moderate	Uneven sideslopes	20-80	1200-3000
21	Rapid	Well	Few to common, Dendritic	III & IV	Moderate	Valley bottoms and toeslopes	0-30	2000-4000
22	Rapid	Well	Common, Dendritic	III & V	Moderate	Steep, smooth sideslopes	30-70	2000-4000
23	Moderately slow to slow	Poorly to imperfectly	Many, Dendritic	IV	Low to Moderate	Gentle, depressional areas	0-20	2000-4500
24	Rapid	Well	Few to many, Dendritic	IV & V	Low to Moderate	Smooth slopes	20-50	2500-5000
25	Rapid	Excessively to well	Common, Dendritic & Parallel	III, IV & V	Low	Valley bottoms and gentle toeslopes	0-30	2400-4500
26	Rapid	Excessively to well	Common, Dendritic & Parallel	III, IV & V	Low	Steep sideslopes	30+	2100-5200
27	Rapid	Well	Common, Dendritic	II	High	Gently sloping, smooth sideslopes	0-30	1200-2000
28	Rapid	Well to Moderately Well	Common, Parallel to Dendritic	I & II	High	Gently sloping, valley bottoms	0-30	1200-1500
29	Rapid	Well	Many, Parallel & Dendritic	IV & V	Low to Moderate	Smooth ridgetops and flats	0-30	3000-5000
31	Rapid	Well	Common, Parallel & Dendritic	IV & V	Low	Steep, smooth sideslopes	30-80+	1800-5000
34	Rapid	Well	Common, Parallel & Dendritic	IV & V	Low	Gentle, smooth, undulating topography	0-30	2000-5000
35	Rapid	Well	Abundant, Parallel & Dendritic	IV & V	Low	Steep, very dissected sideslopes	55-90+	1100-4600
36	Rapid	Well	Common, Parallel & Dendritic	III	Moderate	Gentle, smooth, undulating topography	0-30	1200-2000
37	Rapid	Well	Common, Parallel & Dendritic	III & IV	Moderate	Steep, somewhat uneven sideslopes	30-60+	1200-2500
40	Rapid	Well	Common, Dendritic	N/A	Low	Rugged ridgetop and upper sideslopes	10-90+	2000-6000
41	Rapid	Well	Common, Parallel & Dendritic	III & IV	Low	Steep sideslopes	30-90+	1600-3500
41T	Rapid	Well	Common, Parallel & Dendritic	V	Low	Steep sideslopes	30-90+	3500-5000
42	Rapid	Well	Abundant, Parallel & Dendritic	III & V	Low	Steep, dissected sideslopes	30-90+	1600-4000

ping No.	Infiltration rate	Drainage Class	Surface Drainage Intensity and Pattern	Prod. Site Class	Fertility	Landform	Slope	Elevation
42T	Rapid	Well	Abundant, Parallel & Dendritic	V	Low	Steep, dissected sideslopes	30-90+	3500-5000
43	Rapid	Well	Few, Dendritic	III & IV	Low to Moderate	Gentle, smooth sideslopes and terraces	0-30	800-2000
44	Rapid	Well	Few, Dendritic	III & IV	Low to Moderate	Moderately steep, smooth, and slightly dissected slopes	30-60	1000-3000
45	Rapid	Well	Common to many, Parallel	V	Low	High-elevation benches and flats	0-30	4000-6000
46	Rapid	Well	Common to many, Parallel	N/A	Low	High-elevation benches and flats	0-30	4000-6000
50	Rapid	Well	Common, Dendritic	N/A	Low	Rugged ridgetop and upper sideslopes	10-90+	2000-6000
51	Rapid	Well	Common, Dendritic & Parallel	IV & V	Low	Steep, smooth sideslopes	30-90+	1500-3500
51T	Rapid	Well	Common, Dendritic & Parallel	V	Low	Steep, smooth sideslopes	30-90+	3500-5000
	Rapid	Well	Abundant, Parallel & Dendritic	IV & V	Low	Very steep, dissected sideslopes	30-90+	1500-4500
53	Rapid	Well to moderately	Many, Parallel & Dendritic	III & IV	Low to Moderate	Steep, somewhat uneven sideslopes	20-70	1000-3800
54	Rapid	Moderately well	Abundant, Parallel & Dendritic	III & IV	Moderate	Moderately steep to steep landforms	0-60	1200-4600
56	Rapid	Well	Common to many, Parallel & Dendritic	III & IV	Moderate	Steep, unstable drainages	30-70	1000-4000
57	Rapid	Well to moderately well	Common to many, Parallel & Dendritic	III & IV	Moderate	Steep, uneven, dissected sideslopes	0-60	1600-4000
58	Rapid	Well	Few to common, Parallel & Dendritic	III & IV	Low to Moderate	Smooth, benchy sideslopes	0-30	1700-3500
59	Rapid	Imperfectly	Many, Dendritic	III & IV	Moderate	Steep, hummocky sideslopes	0-50	2000-3500
70	Rapid	Well	Common, Dendritic	N/A	Low	Rugged ridgetop and upper sideslopes	10-90+	2000-6000
71	Rapid	Well	Common, Parallel & Dendritic	IV & V	Low	Steep sideslopes	30-70+	1000-4000
72	Rapid	Well	Abundant, Parallel & Dendritic	IV & V	Low	Steep, dissected sideslopes	30-70+	1500-4500
	Rapid	Well to moderately well	Common, Dendritic	III & IV	Moderate	Moderately steep, smooth sideslopes	30-70	800-3500

Soil Mapping No.	Infiltration rate	Drainage Class	Surface Drainage Intensity and Pattern	Prod. Site Class	Fertility	Landform	Slope	Elevation
74	Rapid	Well	Many, Parallel & Dendritic	IV & V	Moderate	Steep, uneven sideslopes	30-70	3000-4500
75	Rapid	Well	Common, Parallel & Dendritic	IV & V	Moderate	Gentle benches and toeslopes	0-30	1000-4000
81	Rapid	Well	Common, Parallel & Dendritic	IV & V	Low	Steep sideslopes	30-70+	1000-4000
82	Rapid	Well	Abundant, Parallel & Dendritic	IV & V	Low	Steep, dissected sideslopes	30-70+	1500-4500
83	Rapid	Well to moderately well	Common, Dendritic	III & IV	Moderate	Moderately steep, smooth sideslopes	30-70	800-3500
84	Rapid	Well	Common, Dendritic	IV & V	Low	Moderately steep, smooth slopes	30-70	3000-4500
85	Rapid	Well	Common, Parallel & Dendritic	IV & V	Moderate	Gentle, even ridgetops and benches	0-30	1000-4000
87	Rapid	Moderately well	Many, Parallel & Dendritic	III & IV	Moderate	Steep, uneven sideslopes	30-60+	1500-3500
88	Rapid	Well	Common, Parallel Dendritic	III & IV	Moderate	Gentle benches and toeslopes	0-30	1000-3500
89	Moderate	Imperfectly to poorly	Abundant, Parallel & Dendritic	III & IV	Moderate	Gentle uneven toeslopes	0-30	1000-2500
91	Rapid	Well	Common, Dendritic	IV	Low	Steep, smooth to uneven sideslopes	30-60+	1600-3200
92	Rapid	Well	Common, Dendritic	V	Low	Ridgetops and upper sideslopes	30-70	3000-4700
93	Rapid	Well	Common, Parallel & Dendritic	III & IV	Moderate	Gentle, even slope and benches	0-30	2500-4000
94	Rapid	Well	Common, Parallel & Dendritic	IV	Low	Gentle, even slope and benches	0-30	2000-3300
95	Rapid	Well	Common, Parallel, and Dendritic	V	Low	Gentle, even slope and benches	0-30	3200-4400

Soil Mapping Units in Frigid Soil Temperature Regime

SMU	Temperature Regime	Slope Percent
10	Frigid	0-55
11	Frigid	<20
12	Frigid	0-30
13	Frigid	0-15
15	Frigid	0-30
1594	Frigid	0-30
16	Frigid	>30
1641	Frigid	30-90+
1642	Frigid	30-90+
1651	Frigid	30-90+
19	Frigid	20-80
19E	Frigid	>60
19F	Frigid	20-80
19S	Frigid	20-80
21	Frigid	0-30
21N	Frigid	0-30
22	Frigid	30-70
25	Frigid	0-30
26	Frigid	>30
2640	Frigid	
27	Frigid	0-30
28	Frigid	0-30
35	Frigid	55-90
3556	Frigid	
3556F	Frigid	
36	Frigid	0-30
37	Frigid	30-60+
41	Frigid	30-90
4116	Frigid	30-90+
4140	Frigid	
4151	Frigid	30-90
41N	Frigid	30-90
42	Frigid	30-90
4216	Frigid	30-90+
4240	Frigid	
42T	Frigid	30-90
42T40	Frigid	
51	Frigid	30-90
5116	Frigid	30-90+
5150	Frigid	
52	Frigid	30-90+
5216	Frigid	30-90+

SMU	Temperature Regime	Slope Percent
5250	Frigid	
53	Frigid	20-70
5351	Frigid	
5351N	Frigid	
5357	Frigid	
5357N	Frigid	
54	Frigid	0-60
54A	Frigid	<30
54B	Frigid	>30
54F	Frigid	0-60
56	Frigid	30-70
5654	Frigid	
5654F	Frigid	
56F	Frigid	30-70
56N	Frigid	30-70
56S	Frigid	30-70
57	Frigid	0-60
5754	Frigid	0-60
5754F	Frigid	0-60
57A	Frigid	<30
57B	Frigid	>30
58	Frigid	0-30
59	Frigid	0-50
59F	Frigid	0-50
71	Frigid	30-70+
7122	Frigid	30-70+
7170	Frigid	
7173	Frigid	30-70+
72	Frigid	30-70+
7222	Frigid	30-70+
7270	Frigid	
7273	Frigid	30-70+
7273N	Frigid	30-70+
73	Frigid	30-70
74	Frigid	30-70
75	Frigid	0-30
77	Frigid	30-60+
77F	Frigid	30-60+
81	Frigid	30-70+
8122	Frigid	30-70+
8150	Frigid	
8183	Frigid	30-70+

Soil Mapping Units in Frigid Soil Temperature Regime

SMU	Temperature Regime	Slope Percent
8191	Frigid	
82	Frigid	30-70+
8222	Frigid	30-70+
8250	Frigid	
8283	Frigid	30-70+
8287	Frigid	
83	Frigid	30-70
8322	Frigid	30-70
8387	Frigid	
85	Frigid	0-30
87	Frigid	30-60+
87F	Frigid	30-60+
88	Frigid	0-30
91	Frigid	30-60+
9116	Frigid	30-60+
9122	Frigid	
9140	Frigid	
93	Frigid	0-30
94	Frigid	0-30

Soil Mapping Units in Frigid Soil Temperature Regime
Sorted by Slope Percent

SMU	Temperature Regime	Slope Percent
11	Frigid	<20
27	Frigid	0-30
28	Frigid	0-30
36	Frigid	0-30
58	Frigid	0-30
75	Frigid	0-30
85	Frigid	0-30
88	Frigid	0-30
93	Frigid	0-30
94	Frigid	0-30
1594	Frigid	0-30
21N	Frigid	0-30
54A	Frigid	<30
57A	Frigid	<30
16	Frigid	>30
22	Frigid	30-70
26	Frigid	>30
35	Frigid	55-90
37	Frigid	30-60+
41	Frigid	30-90
42	Frigid	30-90
51	Frigid	30-90
52	Frigid	30-90+
56	Frigid	30-70
71	Frigid	30-70+
72	Frigid	30-70+
73	Frigid	30-70
74	Frigid	30-70
77	Frigid	30-60+
81	Frigid	30-70+
82	Frigid	30-70+
83	Frigid	30-70
87	Frigid	30-60+
91	Frigid	30-60+
1641	Frigid	30-90+
1642	Frigid	30-90+
1651	Frigid	30-90+
4116	Frigid	30-90+
4151	Frigid	30-90
4216	Frigid	30-90+
5116	Frigid	30-90+
5216	Frigid	30-90+

SMU	Temperature Regime	Slope Percent
7122	Frigid	30-70+
7173	Frigid	30-70+
7222	Frigid	30-70+
7273	Frigid	30-70+
8122	Frigid	30-70+
8183	Frigid	30-70+
8222	Frigid	30-70+
8283	Frigid	30-70+
8322	Frigid	30-70
9116	Frigid	30-60+
19E	Frigid	>60
41N	Frigid	30-90
42T	Frigid	30-90
54B	Frigid	>30
56F	Frigid	30-70
56N	Frigid	30-70
56S	Frigid	30-70
57B	Frigid	>30
7273N	Frigid	30-70+
77F	Frigid	30-60+
87F	Frigid	30-60+
19	Frigid	20-80
53	Frigid	20-70
5754	Frigid	0-60
19F	Frigid	20-80
19S	Frigid	20-80
54F	Frigid	0-60
5754F	Frigid	0-60
2640	Frigid	
3556	Frigid	
4140	Frigid	
4240	Frigid	
5150	Frigid	
5250	Frigid	
5351	Frigid	
5357	Frigid	
5654	Frigid	
7170	Frigid	
7270	Frigid	
8150	Frigid	
8191	Frigid	
8250	Frigid	

Soil Mapping Units in Frigid Soil Temperature Regime
Sorted by Slope Percent

SMU	Temperature Regime	Slope Percent
8287	Frigid	
8387	Frigid	
9122	Frigid	
9140	Frigid	
3556F	Frigid	
42T40	Frigid	
5351N	Frigid	
5357N	Frigid	
5654F	Frigid	

Soil Mapping Units in Cryic Soil Temperature Regime

SMU	Temperature Regime	Slope Percent
17	Cryic	0-30
1795	Cryic	0-30
18	Cryic	30+
1841T	Cryic	
1892	Cryic	
23	Cryic	0-20
2324	Cryic	
24	Cryic	0-50
2423	Cryic	
29	Cryic	0-30
29N	Cryic	0-30
31	Cryic	30-80+
31N	Cryic	30-80+
34	Cryic	0-30
3429	Cryic	0-30
41T	Cryic	30-90
41T18	Cryic	30-90+
41T40	Cryic	
45	Cryic	<30
46	Cryic	0-30
4603	Cryic	
4603F	Cryic	
4603K	Cryic	
46F	Cryic	0-30
51T	Cryic	30-90
51T18	Cryic	30-90+
51T50	Cryic	
84	Cryic	30-70
92	Cryic	30-70
92R	Cryic	30-70
9240	Cryic	
9284	Cryic	30-70
95	Cryic	0-30
95R	Cryic	0-30

SMU	Temperature Regime	Slope Percent
17	Cryic	0-30
23	Cryic	0-20
24	Cryic	0-50
29	Cryic	0-30
29N	Cryic	0-30
34	Cryic	0-30
45	Cryic	<30
46	Cryic	0-30
46F	Cryic	0-30
95	Cryic	0-30
95R	Cryic	0-30
1795	Cryic	0-30
3429	Cryic	0-30
18	Cryic	30+
31	Cryic	30-80+
31N	Cryic	30-80+
84	Cryic	30-70
92	Cryic	30-70
92R	Cryic	30-70
9284	Cryic	30-70
41T	Cryic	30-90
41T18	Cryic	30-90+
51T	Cryic	30-90
51T18	Cryic	30-90+
1892	Cryic	
2324	Cryic	
2423	Cryic	
4603	Cryic	
9240	Cryic	
1841T	Cryic	
41T40	Cryic	
4603F	Cryic	
4603K	Cryic	
51T50	Cryic	

Soil Mapping Units in Mesic (or unspecified) Soil Temperature Regime

SMU	Temperature Regime	Slope Percent
14	Mesic	0-20
43	Mesic	0-30
44	Mesic	30-60
89	Mesic	0-30

SMU	Temperature Regime	Slope Percent
2493		
2957		
3157		
3157N		
3731		30-80+
42T18		30-90+
5923		
8184		30-70+
8284		30-70+
1	Any	0-20
2	Any	0-30
3	Any	0-5
4	Any	30-100+
40	Any	ANY
50	Any	ANY
5A	Any	0-30
5B	Any	30-70
5C	Any	0-70
6	Any	0-90+
6E	Any	>60
6K	Any	0-90+
7	Any	>30
70	Any	ANY
7E	Any	>60
7F	Any	30-60
7K	Any	>30
8	Any	>30
8E	Any	>60
8F	Any	30-60
8K	Any	>30
9	Any	>60
9E	Any	>60

Sorted by Slope Percent

SMU	Temperature Regime	Slope Percent
1	Any	0-20
2	Any	0-30
3	Any	0-5
14	Mesic	0-20
43	Mesic	0-30
89	Mesic	0-30
5A	Any	0-30
4	Any	30-100+
7	Any	>30
8	Any	>30
9	Any	>60
44	Mesic	30-60
3731		30-80+
8184		30-70+
8284		30-70+
42T18		30-90+
5B	Any	30-70
6E	Any	>60
7E	Any	>60
7F	Any	30-60
7K	Any	>30
8E	Any	>60
8F	Any	30-60
8K	Any	>30
9E	Any	>60
6	Any	0-90+
40	Any	ANY
50	Any	ANY
70	Any	ANY
2493		
2957		
3157		
5923		
3157N		
5C	Any	0-70
6K	Any	0-90+

BEDROCK CHARACTERISTICS AND TABLE

BEDROCK CHARACTERISTICS

These terms are found in the Table of Bedrock Characteristics of Mapping Units.

Bedrock - Consolidated, competent rock which upon weathering produces loose or unconsolidated soil material. In terminology of soil horizon designation, bedrock is designated at the "R" layer. Bedrock material usually required ripping and/or blasting. Includes soft materials that are unweathered such as some sedimentary rock which can be bladed. (Example: Sandstone).

Color - is in narrative terms for fresh unweathered surfaces.

Hardness - Relative rating based on ease of breaking rock with geology hammer.

Hard - Rock cannot be broken or only with great difficulty.

Moderately hard - Rock can readily be broken with hammer but not by hand.

Soft - Rock can be broken by hand.

Degree of Fracturing - Based on the number of frequency of fractures and joints in a rock unit.

Highly fractured - Entire rock unit is completely dissected by fractures and joints less than 1 foot apart.

Moderately fractured - Fractures divide rock unit into units or blocks generally from 1 foot to 5 feet apart .

Slightly fractured - Only occasional fractures noted.

Massive - No fractures or very few fractures noted.

Fracture System - Pattern which the rock fractures follow. (Example: horizontal, platy, vertical, block, random, etc.)

Fracture Surface - Indicates the characteristics of the fracture surface and void space within fractures.

Regular - Smooth, distinct, sharp, clean fracture surfaces.

Irregular - Rough, irregular, fragmented fracture surfaces.

Competency - Relative inherent strength of rock as it occurs on the landscape. Based on degree of weathering, fracturing, hardness, stability and failures observed.

Competent - No failures within rock unit observed. Rocks of the unit are stable and have strong resistance to mass movement.

Moderately competent - Some failures are noted. Rocks of the unit are moderately stable and have some resistance to mass movement.

Incompetent - Failures are common to rock unit. Rocks of the unit are soft, deeply weathered and have high potential for mass movement.

**SOIL RESOURCE INVENTORY
GIFFORD PINCHOT NATIONAL FOREST**

TABLE OF BEDROCK CHARACTERISTICS OF MAPPING UNITS

Mapping Unit No.	Composition	Color (fresh surface)	Hardness	Degree of Fracturing	Fracture System	Fracture Surface	Competency
1/ 1, 4, 10-19, 21, 22, 25, 26, 27, 28, 34, 36, 37, 54, 57, 59	NA	NA	NA	NA	NA	NA	NA
2 3	Andesite or Basalt	Dark Gray	Hard	Moderate to High	Blocky	Regular	Competent
5	Andesite (Scoria-ceous)	Dark Gray, Red or Black	Moderately Hard	High	Random Hard	Irregular	Competent
23, 24	Pyroclastics	Red or Yellow	Soft	High	Random	Irregular	Moderately Competent to Incompetent
29, 31	Andesite (50%) Breccias (50%)	Dark Gray Gray	Hard	Moderate	Random	Irregular	Competent
35	Breccias (50%)	Gray	Hard to Moderately Hard	Moderate	Random	Irregular	Competent to Moderately Competent
40, 41, 41T, 42	Andesite and Andesitic Breccias	Dark Gray	Hard	Moderate	Random	Regular	Competent
43, 44, 45, 46	Andesite (75%), Breccias (25%)	Dark Gray, Dark Gray to Tan	Hard to Moderately Hard	Moderate	Random	Regular to Irregular	Competent to Moderately Competent
50, 51, 51T	Sandstone (50%), Siltstone (25%), Breccias (25%)	Dark Gray, Brown to Black, Dark Gray to Greenish Gray	Hard, Moderately Hard	Moderate High, Moderate	Random	Irregular	Competent
53	Sandstone or Siltstone (50%), Breccias (50%)	Dark Gray, Brown to Black	Moderately Hard, Moderately Hard to Soft	Moderate, High	Random	Irregular	Moderately Competent to Competent
58	Breccias (50%), Andesite (50%) Sandstone (50%)	Gray to Black Dark Gray	Hard Hard	Moderate Moderate	Random	Irregular	Competent
52	Siltstone (25%) Breccias (25%)	Brown to Black Dark Gray	Moderately Hard Hard	High Moderate	Random	Irregular	Competent
56	Sandstone (25%) Siltstone (25%) Breccias (50%)	Dark Gray Brown to Black Dark Gray	Moderately Hard to Soft	High	Random	Irregular	Incompetent

Mapping Unit No.	Composition	Color (fresh surface)	Hardness	Degree of Fracturing	Fracture System	Fracture Surface	Competency
75	Andesite (50%) Marine and Volcanic Sediments	Dark Gray Black to Grayish White	Hard Hard to Moderately Hard	Moderate to High	Random	Regular Irregular	Competent Competent to Moderately Competent
73, 74	Marine and Volcanic Sediments	Black to Grayish White	Moderately Hard to Soft	Moderate to High	Random	Irregular	Moderately Competent
81, 82	Breccia (50%) Conglomerate (20%) Volcanic Sandstone (20%) Basalt (10%)	Gray to Reddish Gray Gray Light Gray Dark Gray	Hard to Moderately Hard Hard Hard Hard	Moderate to High	Random	Irregular	Competent Competent Competent Competent
83, 84	Breccia	Reddish Gray	Moderately Hard to Soft	Slight to Moderate	Random	Irregular	Moderately Competent
85	Volcanic Sandstone (75%) Volcanic Siltstone (25%)	Gray Black to Buff Red	Moderately Hard Soft	High	Random	Irregular	Moderately Competent Incompetent
86, 88	Breccia (90%), Volcanic Sandstone (10%)	Reddish Brown, Gray	Moderately Hard to Soft	Slight	Random	Irregular	Moderately Competent
89	Breccia	Red to Reddish, Gray	Soft	Slight	Random	Irregular	Incompetent
91, 92, 93, 94, 95	Basalts (50%), Andesites (50%), Andesitic Breccias	Gray to Black	Hard	Moderate to High	Blocky and Columnar, Some Platy	Regular	Competent

1/ Bedrock of these units was not rated. Depth to bedrock is greater than 12' or bedrock composition is highly variable.

SOIL INTERPRETATIONS

SOIL INTERPRETATIONS

There are 24 soil interpretations included in this Chapter. These can be subdivided into 5 groups as listed below.

Soil and Water

1. Surface Soil Erosion Potential
2. Concentrated Water Erosion Potential
3. Displacement Potential
4. Compaction Potential
5. Natural Stability
6. Expected Mass Movement as a Result of Activities
7. Water Yield Class
8. Hydrologic Group
9. Bedrock Hydrologic Characteristics

Recreation

10. Soil Suitability for Recreation Area Development
11. Soil Limitation for Recreation Development
12. Soil and Site Damage Susceptibility
13. Trail Suitability
14. Limitation for Trails

Timber Management

15. Potential for Regeneration
16. Timber Harvest Guidelines
17. Tractor
18. High Lead
19. Suspended Logging Systems

Road Development

20. Road Location Guidelines
21. Probability of Cutbank Failures
22. Susceptibility to Cutbank Sloughing and Raveling

Other Interpretations (Grouping and Factors)

23. Planning and Land Class
24. Inherent Stability Factor

NOTE:

The interpretation discussion (definition) must be read carefully and understood before applying the interpretation with a soil mapping unit. For example, "Surface Erosion Potential" recognize that this interpretation applies to the situation where all vegetative cover and litter is removed.

Soil Mapping Units 6, 7, 8, and 9 interpretations apply to all their suffix extension, i.e., 7-7E, 7F, and 7K.

For soil mapping units found with "N" or "S," use the interpretation with the number.

The Timber Management interpretations concerning logging systems generally give an okay, not okay, or upper limit for the system. Specific to these interpretations, they must be tempered to the site specific situation. Tractor logging includes both track and rubber tired skidders. No tractor harvest equipment should be permitted on slopes over 30 percent. "Loader loggers" are not included in this interpretation. This loader logger has demonstrated successful operation on the more compactible soils and on slopes up to 35 percent.

No harvest should occur on slopes over 100 percent.

Surface Soil Erosion Potential

This rating is based on expected losses of surface soil when all vegetative cover, including litter, is removed. Evaluations of climate, slope gradient and length, soil characteristics, hydrologic characteristics of the soil and bedrock materials of each mapping unit are considered in making ratings.

Very slight - Practically no loss of surface soil materials is expected.

Slight - Little loss of soil materials are expected. Some minor sheet and rill erosion may occur.

Moderate - Some loss of surface soil materials can be expected. Rill erosion and some small gullies or sheet erosion may be occurring. Sheet erosion can be determined by some soil pedestals and observable accumulation of soil materials along the upslope edge of rocks and debris. At this level of erosion there is a possible fertility loss.

Severe - Considerable loss of surface soil materials can be expected. Rill erosion, numerous small gullies or evidence that considerable loss from sheet erosion may occur. Sheet erosion is indicated by frequent occurrence of soil pedestals and considerable accumulation of soil materials along the upslope edge of rocks and debris. This is accompanied by a probably fertility loss.

Very severe - Large loss of surface soil material can be expected in the form of many large gullies and/or numerous small gullies or large loss from sheet erosion. Sheet erosion loss is exhibited by numerous examples of soil pedestals and extensive accumulation of soil materials along the upslope edge of rocks and debris. This is accompanied by a fertility loss.

SMU#	Interpretation
1	Slight
2	Slight
3	Slight
4	N/A
5a	Slight to Moderate
5b	Slight to Moderate
5c	Severe
6	Moderate
7	Moderate
8	Moderate
9	Very Severe
10	Severe
11	Slight
12	Slight
13	Slight

SMU#	Interpretation
14	Slight
15	Slight
16	Moderate
17	Slight
18	Moderate
19	Moderate
21	Slight
22	Moderate
23	Slight
24	Moderate
25	Slight
26	Slight to Moderate
27	Slight
28	Slight
29	Moderate

SMU#	Interpretation
31	Moderate
34	Moderate
35	Very Severe
36	Moderate
37	Severe
40	N/A
41	Moderate
41T	Moderate
42	Moderate
42T	Moderate
43	Slight
44	Moderate
45	Moderate
46	Moderate
50	N/A

SMU#	Interpretation
51	Moderate
51T	Moderate
52	Moderate
53	Moderate
54	Moderate
56	Moderate
57	Moderate
58	Moderate
59	Moderate
70	N/A
71	Moderate
72	Moderate
73	Moderate
74	Moderate
75	Moderate
77	Moderate
81	Moderate
82	Moderate
83	Moderate
84	Moderate
85	Moderate
87	Moderate
88	Moderate
89	Moderate
91	Moderate
92	Moderate
93	Moderate
94	Moderate
95	Moderate
1594	Slight

SMU#	Interpretation
1641	Moderate
1642	Moderate
1651	Moderate
1795	Moderate
1841T	Moderate
1892	Moderate
2324	Slight
2423	Slight
2493	Slight
2640	Slight-Moderate
2957	Moderate
3157	Moderate
3429	Moderate
3556	Moderate-Severe
3731	Moderate-Severe
4116	Moderate
41T18	Moderate
4140	Moderate
41T40	Moderate
4151	Moderate
4216	Moderate
42T18	Moderate
4240	Moderate
42T40	Moderate
4603	Severe
5116	Moderate
51T18	Moderate
5150	Moderate
51T50	Moderate
5216	Moderate

SMU#	Interpretation
5250	Moderate
5351	Moderate
5357	Moderate
5654	Moderate
5754	Moderate
5923	Moderate
7122	Moderate
7170	Moderate
7173	Moderate
7222	Moderate
7270	Moderate
7273	Moderate
7377	Moderate
8122	Moderate
8150	Moderate
8183	Moderate
8184	Moderate
8191	Moderate
8222	Moderate
8250	Moderate
8283	Moderate
8284	Moderate
8287	Moderate
8322	Moderate
8387	Moderate
9116	Moderate
9122	Moderate
9140	Moderate
9240	Moderate
9284	Moderate

Concentrated Water Erosion Potential

This rating is based on expected losses of soil material when water is concentrated in an inside road ditch or skid trail.

Low - Little loss of soil materials is expected. Some minor rill and gully erosion may occur.

Moderate - Some loss of soil materials can be expected. Rill and gully erosion occurs.

High - Large loss of soil material can be expected in the form of large gullies and/or numerous small gullies.

SMU#	Interpretation
1	Low
2	Low
3	Low
4	N/A
5a	Moderate
5b	High
5c	High
6	Moderate
7	Moderate
8	Moderate
9	High
10	High
11	Moderate
12	Moderate
13	Moderate
14	Low
15	Moderate
16	Moderate
17	Moderate
18	Moderate
19	High
21	Low-Moderate
22	Moderate

SMU#	Interpretation
23	Low
24	Moderate
25	High
26	High
27	High
28	High
29	Moderate
31	Moderate
34	High
35	High
36	High
37	High
40	N/A
41	Moderate
41T	Moderate
42	Moderate
42T	Moderate
43	Low
44	Moderate
45	Moderate
46	Moderate
50	N/A
51	Moderate

SMU#	Interpretation
51T	Moderate
52	Moderate
53	Moderate
54	Moderate
56	Moderate
57	Moderate
58	Moderate
59	High
70	N/A
71	Moderate
72	Moderate
73	Moderate
74	Moderate
75	Moderate
77	Moderate
81	Moderate
82	Moderate
83	Moderate
84	Moderate
85	Moderate
87	Moderate
88	Moderate
89	Moderate

SMU#	Interpretation
91	Moderate
92	Moderate
93	Moderate
94	Moderate
95	Moderate
1594	Moderate
1641	Moderate
1642	Moderate
1651	Moderate
1795	Moderate
1841T	Moderate
1892	Moderate
2324	Low-Moderate
2423	Low-Moderate
2493	Moderate
2640	High
2957	Moderate
3157	Moderate
3429	High
3556	High
3731	High
4116	Moderate
41T18	Moderate
4140	Moderate
41T40	Moderate
4151	Moderate
4216	Moderate
42T18	Moderate
4240	Moderate
42T40	Moderate

SMU#	Interpretation
4603	High
5116	Moderate
51T18	Moderate
5150	Moderate
51T50	Moderate
5216	Moderate
5250	Moderate
5351	Moderate
5357	Moderate
5654	Moderate
5754	Moderate
5923	High
7122	Moderate
7170	Moderate
7173	Moderate
7222	Moderate
7270	Moderate
7273	Moderate
7377	Moderate
8122	Moderate
8150	Moderate
8183	Moderate
8184	Moderate
8191	Moderate
8222	Moderate
8250	Moderate
8283	Moderate
8284	Moderate
8287	Moderate
8322	Moderate

SMU#	Interpretation
8387	Moderate
9116	Moderate
9122	Moderate
9140	Moderate
9240	Moderate
9284	Moderate

Displacement Potential

Detrimental Displacement. Soil displacement is the removal and horizontal movement of soil from one place to another by mechanical forces such as a blade. Detrimental displacement is the removal of more than 50 percent of the topsoil or humus enriched A1 and/or AC horizons from an area of 100 square feet or more which is at least 5 feet in width. Mixing of surface soil layers by disc-plow operations, or removal of surface soil layers by hand scalping are not considered as detrimental displacement.

SUSCEPTIBILITY TO DISPLACEMENT

Factors Affecting	Low	Moderate	High
Texture of surface	clay, sic, sc, sicl	l, cl, sil, vsl, fsl	sl and coarser
Organic carbon content (%) surface 6 inches	>6	2-6	<2
Thickness of duff (inches)	>3	1-3	<1
Coarse fragment content (%) by volume	45	25-45	<25
Structure of surface soil	--	moderate, medium, coarse	single grain weak f, vf

Assumption: Ratings are based on dry soil conditions.

SMU#	Interpretation
1	Low
2	N/A
3	Low
4	N/A
5A	Moderate
5B	N/A
6	N/A
7	N/A
8	N/A
9	N/A
10	High
11	Low to Moderate
12	High
13	High
14	Moderate

SMU#	Interpretation
15	Moderate
16	N/A
17	Moderate
18	N/A
19	N/A
21	Moderate
22	N/A
23	Moderate
24	Moderate
25	High
26	N/A
27	High
28	High
29	High
31	N/A

SMU#	Interpretation
34	High
35	N/A
36	High
37	N/A
40	N/A
41	N/A
41T	N/A
42	N/A
42T	N/A
43	Moderate
44	N/A
45	Moderate to High
46	Moderate to High
50	N/A
51	N/A

SMU#	Interpretation
51T	N/A
52	N/A
53	Moderate to High
54	High
56	N/A
57	High
58	Moderate
59	Moderate
70	N/A
71	N/A
72	N/A
73	N/A
74	N/A
75	Moderate
77	N/A
81	N/A
82	N/A
83	N/A
84	N/A
85	Moderate
87	N/A
88	Moderate
89	Moderate
91	N/A
92	N/A
93	Moderate
94	Moderate
95	Moderate
1594	Moderate
1641	N/A

SMU#	Interpretation
1642	N/A
1651	N/A
1795	Moderate
1841T	N/A
1892	N/A
2324	Moderate
2423	Moderate
2493	Moderate
2640	N/A
2957	High
3157	N/A
3429	High
3556	N/A
3731	High
4116	N/A
41T18	N/A
4140	N/A
41T40	N/A
4151	N/A
4216	N/A
42T18	N/A
4240	N/A
4603	Moderate to High
5116	N/A
51T18	N/A
5150	N/A
51T50	N/A
5216	N/A
5250	N/A
5351	Moderate-High

SMU#	Interpretation
5457	N/A
5654	High
5754	High
5923	Moderate
7122	N/A
7170	N/A
7173	N/A
7222	N/A
7270	N/A
7273	N/A
7377	N/A
8122	N/A
8150	N/A
8183	N/A
8184	N/A
8191	N/A
8222	N/A
8250	N/A
8283	N/A
8284	N/A
8287	N/A
8322	N/A
8387	N/A
9116	N/A
9122	N/A
9140	N/A
9240	N/A
9284	N/A

Compaction Potential

Detrimental Compaction. Compaction of soil increases soil bulk density and decreases porosity as a result of the application of mechanical forces such as weight and vibration. Detrimental compaction is that beyond the limits described. Because of the unique physical properties and management problems of volcanic ash and pumice soils, a different criterion for determining detrimental compaction has been established for them.

- (a) **Volcanic Ash/Pumice Soils.** An increase in soil bulk density of 20 percent or more over the undisturbed level.
- (b) **Other Soils.** An increase in soil bulk density of 15 percent or more over the undisturbed level, a macropore space reduction of 50 percent or more, and/or a reduction below the 15 percent level as measured by an air permeameter.

SUSCEPTIBILITY TO COMPACTION

Factors Affecting	Low	Moderate	High
Soil texture surface 12 inches	cosl and coarser	clay, sc, sic	vfsl, fsl, sil, l, cl, sicl
Cobbles and stones (% by vol.)	>40	20-40	<20
Organic carbon (%) surface 6 inches	>6	2-6	<2
Organic carbon (1%) 6-12 inches	2-6	1-2	<1
Duff thickness (in.)	>3	1-2	<1
Soil structure of family control section	strong, coarse, medium	moderate fine, medium, coarse, single grain	weak, fine v. fine

Assumption: Soil moisture content is between 0.1 and 2 Bar tension

SMU#	Interpretation
1	Low
2	N/A
3	High
4	N/A
5A	Low
5B	N/A
6	N/A
7	N/A
8	N/A

SMU#	Interpretation
9	N/A
10	Low
11	Low to Moderate
12	Low to Moderate
13	Moderate
14	Moderate
15	Moderate
16	N/A
17	Moderate

SMU#	Interpretation
18	N/A
19	N/A
21	Moderate
22	N/A
23	High
24	High
25	Moderate
26	N/A
27	Moderate

SMU#	Interpretation
28	Moderate
29	Moderate
31	N/A
34	Moderate
35	N/A
36	Moderate
37	N/A
40	N/A
41	N/A
41T	N/A
42	N/A
42T	N/A
43	Moderate
44	N/A
45	Moderate to High
46	Moderate to High
50	N/A
51	N/A
51T	N/A
52	N/A
53	Moderate to High
54	High
56	N/A
57	High
58	Moderate
59	Moderate to High
70	N/A
71	N/A
72	N/A
73	N/A

SMU#	Interpretation
74	N/A
75	Moderate
77	N/A
81	N/A
82	N/A
83	N/A
84	N/A
85	Moderate
87	N/A
88	Moderate to High
89	Moderate to High
91	N/A
92	N/A
93	High
94	High
95	High
1594	High
1641	N/A
1642	N/A
1651	N/A
1795	High
1841T	N/A
1892	N/A
2324	High
2423	High
2493	High
2640	N/A
2957	Moderate
3157	N/A
3429	Moderate

SMU#	Interpretation
3556	N/A
3731	Moderate
4116	N/A
41T18	N/A
4140	N/A
41T40	N/A
4151	N/A
4216	N/A
42T18	N/A
4240	N/A
42T40	N/A
4603	Moderate to Low
5116	N/A
51T18	N/A
5150	N/A
51T50	N/A
5216	N/A
5351	Moderate
5357	Moderate
5654	Moderate
5754	Moderate
5923	Moderate to High
7122	N/A
7170	N/A
7173	N/A
7222	N/A
7270	N/A
7273	N/A
7377	N/A
8122	N/A

SMU#	Interpretation
8150	N/A
8183	N/A
8184	N/A
8191	N/A
8222	N/A
8250	N/A
8283	N/A
8284	N/A
8287	N/A
8322	N/A
8387	N/A
9116	N/A
9122	N/A
9140	N/A
9240	N/A
9284	N/A

Natural Stability

This rating is based on the relative stability of the mapping units as they occur in the natural state. This includes any movement or loss other than surface erosion, by slumps, slides and all kinds of deep-seated failures.

- I. *Very Stable* - No evidence of failure.
- II. *Stable* - Occasional failures are observed.
- III. *Moderately Stable* - Several failures are observed.
- IV. *Unstable* - Many failures are observed.
- V. *Very Unstable* - Entire area shows evidence of recent and past failures.

SMU#	Interpretation
1	I
2	I
3	I
4	II
5a	I
5b	II
5c	I-II
6	II-III
7	II-III
8	II-III
9	III
10	III
11	I
12	I-II
13	II
14	I
15	I-II
16	II
17	I-II
18	II
19	III-IV

SMU#	Interpretation
21	II
22	II
23	II
24	II
25	I
26	II
27	II
28	II
29	I
31	II-III
34	II
35	III
36	II
37	II
40	II
41	II
41T	II
42	II
42T	II
43	I
44	II

SMU#	Interpretation
45	I-II
46	I-II
50	II
51	II
51T	II
52	II
53	III-IV
54	IV-V
56	IV-V
57	III-IV
58	I
59	IV-V
70	II
71	II
72	II
73	II-III
74	II-III
75	I-II
77	IV
81	II
82	II

SMU#	Interpretation
83	II-III
84	II-III
85	I-II
87	IV
88	II
89	IV
91	II
92	II
93	I
94	I
95	I
1594	1-II
1641	II
1642	II
1651	II
1795	I-II
1841T	II
1892	II
2324	II
2423	II
2493	I-II
2640	II
2957	II-III
3157	II-IV
3429	II
3556	III-IV
3731	II-III
4116	II
41T18	II
4140	II

SMU#	Interpretation
41T40	II
4151	II
4216	II
42T18	II
4240	II
42T40	II
4603	I-II
5116	II
51T18	II
5150	II
51T50	II
5216	II
5250	II
5351	III-IV
5357	III-IV
5654	IV-V
5754	III-IV
5923	III-IV
7122	II
7170	II
7173	II
7222	II
7270	II
7273	II
7377	III-IV
8122	II
8150	II
8183	II
8184	II
8191	II

SMU#	Interpretation
8222	II
8250	II
8283	II
8284	II
8287	II-IV
8322	II-III
8387	III-IV
9116	II
9122	II
9140	II
9240	II
9284	II

Expected Mass Movement as a Result of Man's Activities

This rating indicates the expected mass movement resulting from activities as compared to stability under natural conditions. Ratings are based on soil and bedrock characteristics, slopes, revegetation potential, and effects of timber removal, road construction and fire.

Unchanged - The expected mass movement is relatively unchanged from that of the natural state.

Increased - The expected mass movement is greater than that of the natural state.

Greatly Increased - The expected mass movement is much greater than that of the natural state.

SMU#	Interpretation
1	Unchanged
2	Unchanged
3	Unchanged
4	N/A
5a	Unchanged
5b	Increased
5c	Increased
6	Increased
7	Increased
8	Increased
9	Greatly Increased
10	Increased
11	Unchanged
12	Unchanged
13	Unchanged
14	Unchanged
15	Unchanged
16	Unchanged
17	Unchanged
18	Unchanged
19	Greatly Increased
21	Unchanged
22	Unchanged

SMU#	Interpretation
23	Unchanged
24	Unchanged
25	Unchanged
26	Unchanged
27	Unchanged
28	Unchanged
29	Unchanged
31	Unchanged
34	Unchanged
35	Increased
36	Unchanged
37	Unchanged
40	Unchanged
41	Unchanged
41T	Unchanged
42	Increase
42T	Increase
43	Unchanged
44	Unchanged
45	Unchanged
46	Unchanged
50	Unchanged
51	Unchanged

SMU#	Interpretation
51T	Unchanged
52	Increased
53	Increased
54	Greatly Increased
56	Greatly Increased
57	Increased
58	Unchanged
59	Greatly Increased
70	Unchanged
71	Unchanged
72	Increased
73	Increased
74	Increased
75	Unchanged
77	Greatly Increased
81	Unchanged
82	Increased
83	Increased
84	Increased
85	Unchanged
87	Greatly Increased
88	Unchanged
89	Greatly Increased

SMU#	Interpretation
91	Unchanged
92	Unchanged
93	Unchanged
94	Unchanged
95	Unchanged
1594	Unchanged
1641	Unchanged
1642	Unchanged
1651	Unchanged
1795	Unchanged
1841T	Unchanged
1892	Unchanged
2324	Unchanged
2423	Unchanged
2493	Unchanged
2640	Unchanged
2957	Unchanged
3157	Increased
3429	Unchanged
3556	Greatly Increased
3731	Increase
4116	Unchanged
41T18	Unchanged
4140	Unchanged
41T40	Unchanged
4151	Unchanged
4216	Increased
42T18	Increased
4240	Increased
42T40	Increased

SMU#	Interpretation
4603	Unchanged
5116	Unchanged
51T18	Unchanged
5150	Unchanged
51T50	Unchanged
5216	Increased
5250	Increased
5351	Increased
5357	Increased
5654	Greatly Increased
5754	Greatly Increased
5923	Greatly Increased
7122	Unchanged
7170	Unchanged
7173	Unchanged
7222	Increased
7270	Increased
7273	Increased
7377	Greatly Increased
8122	Unchanged
8150	Unchanged
8183	Unchanged
8184	Unchanged
8191	Unchanged
8222	Increased
8250	Increased
8283	Increased
8284	Increased
8287	Greatly Increased
8322	Unchanged

SMU#	Interpretation
8387	Greatly Increased
9116	Unchanged
9122	Unchanged
9140	Unchanged
9240	Unchanged
9284	Unchanged

Water Yield Class

This interpretation is an indication of the rate and amount of water yield expected from each soil. It is based on factors such as soil characteristics, infiltration rates, permeability, slope, climate, vegetation, and drainage patterns.

Class I - These soils have a high water detention storage capacity and a low rate of runoff. Little water is yielded to peak flows until detention storage capacity is exceeded or unless the soils are initially saturated or frozen. They are important in sustaining high base flow due to a relatively large volume of water held in detention storage.

Class II - These soils have a moderate water detention storage capacity and a moderate rate of runoff. Water contributes to both peak flows and base flow.

Class III - These soils have a low water detention storage capacity and a high rate of runoff. The storage capacity is low and easily exceeded with most of the water contributing to peak flow. Little water is yielded to sustain base flow.

SMU#	Interpretation
1	II
2	III
3	III
4	N/A
5a	III
5b	III
5c	III
6	III
7	III
8	III
9	III
10	II
11	II
12	I
13	I
14	I
15	I
16	I
17	I
18	I

SMU#	Interpretation
19	I
21	I
22	I
23	I
24	II
25	I
26	I
27	I
28	I
29	II
31	II
34	I
35	III
36	I
37	I
40	III
41	III
41T	III
42	III
42T	III

SMU#	Interpretation
43	I
44	III
45	III
46	III
50	III
51	III
51T	III
52	III
53	II
54	I
56	II
57	I
58	III
59	I
70	III
71	III
72	III
73	II
74	II
75	I

SMU#	Interpretation
77	II
81	III
82	III
83	II
84	II
85	II
87	II
88	I
89	I
91	III
92	III
93	III
94	III
95	III
1594	II
1641	II
1642	II
1651	II
1795	II
1841T	II
1892	II
2324	I
2423	II
2493	II
2640	II
2957	II
3157	II
3429	I
3556	III
3731	I

SMU#	Interpretation
4116	III
41T18	III
4140	III
41T40	III
4151	III
4216	III
42T18	III
4240	III
42T40	III
4603	III
5116	II
51T18	II
5150	III
51T50	III
5216	II
5250	III
5351	II
5357	II
5654	II
5754	I
5923	I
7122	III
7170	III
7173	III
7222	III
7270	III
7273	III
7377	II
8122	III
8150	III

SMU#	Interpretation
8183	II
8184	III
8191	III
8222	III
8250	III
8283	III
8284	III
8287	III
8322	III
8387	III
9116	III
9122	III
9140	III
9240	III
9284	III

Hydrologic Group

This interpretation is a grouping of soils into four classes, indicating the general infiltration and water movement ability of the soil and bedrock materials. This method of ratings has been developed by the Soil Conservation Service. The four groups are the standard Soil Conservation Service groupings and definitions.

Group A - Soils having high infiltration rates even when thoroughly wetted, consisting chiefly of deep, well to excessively drained sands and/or gravel. These soils have a high rate of water transmission and would result in a low runoff potential.

Group B - Soils have moderate infiltration rates when thoroughly wetted, consisting chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

Group C - Soils having slow infiltration rates when thoroughly wetted, consisting chiefly of (1) soils with a layer that impedes the downward movement of water or, (2) soils with moderately fine to fine texture and a slow infiltration rate. These soils have a slow rate of water transmission.

Group D - Soils having very slow infiltration rates when thoroughly wetted, consisting chiefly of (1) clay soils with high swelling potential, (2) soils with a high permanent water table, (3) soils with claypan or clay layer at or near the surface, and (4) shallow soils over nearly impervious materials. These soils have a very slow rate of water transmission.

SMU#	Interpretation
1	A
2	B
3	D
4	N/A
5a	A
5b	A
5c	A
6	B
7	B
8	B
9	A
10	A
11	A
12	A/B
13	B
14	B
15	A/B

SMU#	Interpretation
16	A/B
17	A/B
18	A/B
19	C
21	A/B
22	A/B
23	B
24	B
25	A
26	A
27	A/C
28	A/C
29	B
31	B
34	A
35	B
36	B

SMU#	Interpretation
37	B
40	N/A
41	B
41T	B
42	B
42T	B
43	C
44	C
45	B
46	B
50	N/A
51	B
51T	B
52	B
53	B
54	C
56	B

SMU#	Interpretation
57	A/B
58	B
59	C
70	N/A
71	B
72	B
73	B
74	C
75	C
77	B
81	B
82	B
83	B
84	B
85	B
87	C
88	C
89	C
91	B
92	B
93	B
94	B
95	B
1594	A/B
1641	A/B
1642	A/B
1651	A/B
1795	A/B
1841T	A/B
1892	A/B

SMU#	Interpretation
2324	B
2423	B
2493	B
2640	A
2957	B
3157	B
3429	B
3556	B
3731	B
4116	B
41T18	B
4140	B
41T40	B
4151	B
4216	B
42T18	B
4240	B
42T40	B
4603	C
5116	B
51T18	B
5150	B
51T50	B
5216	B
5250	B
5351	B
5357	B
5654	B
5754	A/B
5923	B

SMU#	Interpretation
7122	B
7170	B
7173	B
7222	B
7270	B
7273	B
7377	B
8122	B
8150	B
8183	B
8184	B
8191	B
8222	B
8250	B
8283	B
8284	B
8287	B
8322	B
8387	B
9116	B
9122	B
9140	B
9240	B
9284	B

Bedrock Hydrologic Characteristics

This interpretation indicates the relative capacity of bedrock to store and transmit water. The rating is based on bedrock kind, texture, type and extent of fracturing, frequency of jointing, bedding characteristics, and degree of weathering.

Class I - This indicates that the bedrock has a relatively high capacity to store water. The water transmission rate is low unless the storage capacity is exceeded. Rocks in this class include sandstones because of their texture, fracture, and bedding characteristics; and basalts where water occurs in large tubes and other cavities or in the interflow zone between successive lava flows.

Class II - This indicates that the bedrock has a moderate capacity to store water. The rate of water transmission is moderate. Rocks in this class are generally hard to moderately hard, moderately fine-textured, and moderately to highly fractured siltstone, mudstone, and pyroclastics.

Class III - This indicates that the bedrock has a relatively low capacity to store water. The rate of water transmission is rapid. Rocks generally in this class are fractured coarse crystalline (i.e., granite, gabbro and gneiss) and other hard-fractured rocks such as conglomerate.

Class IV - This indicates that the bedrock has both low storage capacity and low rate of water transmission. Rocks in this class are generally highly weathered, fine textured, and lack open fracture channels.

SMU#	Interpretation
1	N/A
2	N/A
3	I
4	II
5a	I
5b	I
5c	I
6	II
7	II
8	II
9	N/A
10	N/A
11	N/A
12	N/A
13	N/A
14	N/A
15	N/A

SMU#	Interpretation
16	N/A
17	N/A
18	N/A
19	N/A
21	N/A
22	N/A
23	N/A
24	N/A
25	N/A
26	N/A
27	N/A
28	N/A
29	II
31	II
34	N/A
35	II
36	N/A

SMU#	Interpretation
37	N/A
40	I
41	I
41T	I
42	I
42T	I
43	N/A
44	I
45	I
46	I
50	II
51	II
51T	II
52	II
53	II
54	N/A
56	II

SMU#	Interpretation
57	N/A
58	I
59	N/A
70	II
71	II
72	II
73	II
74	II
75	N/A
77	II
81	II
82	II
83	II
84	II
85	II
87	II
88	N/A
89	N/A
91	I
92	I
93	I
94	I
95	I
1594	N/A
1641	N/A
1642	N/A
1651	N/A
1795	N/A
1841T	N/A
1892	N/A

SMU#	Interpretation
2324	N/A
2423	N/A
2493	N/A
2640	N/A
2957	II
3157	II
3429	N/A
3556	II
3731	N/A
4116	I
41T18	I
4140	I
41T40	I
4151	I
4216	I
42T18	I
4240	I
42T40	I
4603	I
5116	I
51T18	II
5150	II
51T50	II
5216	II
5250	II
5351	II
5357	II
5654	II
5754	N/A
5923	N/A

SMU#	Interpretation
7122	II
7170	II
7173	II
7222	II
7270	II
7273	II
7377	II
8122	II
8150	II
8183	II
8184	II
8191	II
8222	II
8250	II
8283	II
8284	II
8287	II
8322	II
8387	II
9116	I
9122	I
9140	I
9240	I
9284	I

Soil Suitability for Recreation Area Development

This rating is based on soil and bedrock characteristics and topographic features of each unit as related to recreation development. Factors important to this interpretation are soil depth, texture, structure, permeability, drainage, topography, and susceptibility to flooding.

Unsuited - This rating indicates that soils and/or topography are of a nature which would prohibit recreation development without extensive modification.

Low - These soil units have major limitations to recreation development but limited development is feasible.

Moderate - This rating indicates that the soil unit is generally suitable for recreation development but has minor limitations.

High - These soils are particularly well suited for recreation development. Generally, they have no limitations.

SMU#	Interpretation
1	Unsuited
2	Unsuited to low
3	Unsuited
4	Unsuited
5a	Low
5b	Unsuited
5c	Unsuited
6	Unsuited
7	Unsuited
8	Unsuited
9	Unsuited
10	Unsuited
11	Moderate
12	Moderate
13	High
14	High
15	High
16	Unsuited
17	High
18	Unsuited

SMU#	Interpretation
19	Unsuited
21	High
22	Unsuited
23	Low
24	High to Unsuited
25	Moderate
26	Unsuited
27	Unsuited
28	Low
29	Moderate
31	Unsuited
34	Moderate
35	Unsuited
36	Moderate
37	Unsuited
40	Unsuited
41	Unsuited
41T	Unsuited
42	Unsuited
42T	Unsuited

SMU#	Interpretation
43	Moderate
44	Moderate
45	Moderate
46	Moderate
50	Unsuited
51	Unsuited
51T	Unsuited
52	Unsuited
53	Unsuited
54	Unsuited
56	Unsuited
57	Low
58	Moderate
59	Unsuited
70	Unsuited
71	Unsuited
72	Unsuited
73	Unsuited
74	Unsuited
75	Moderate to High

SMU#	Interpretation
77	Unsuited
81	Unsuited
82	Unsuited
83	Unsuited
84	Unsuited
85	Moderate to High
87	Unsuited
88	Moderate to High
89	Unsuited
91	Unsuited
92	Unsuited
93	Moderate
94	Moderate
95	Moderate
1594	High
1641	Unsuited
1642	Unsuited
1651	Unsuited
1795	High
1841T	Unsuited
1892	Unsuited
2324	Unsuited to High
2423	Unsuited to High
2493	High
2640	Unsuited
2957	Moderate
3157	Unsuited
3429	Moderate
3556	Unsuited
3731	Moderate

SMU#	Interpretation
4116	Unsuited
41T18	Unsuited
4140	Unsuited
41T40	Unsuited
4151	Unsuited
4216	Unsuited
42T18	Unsuited
4240	Unsuited
42T40	Unsuited
4603	Low
5116	Unsuited
51T18	Unsuited
5150	Unsuited
51T50	Unsuited
5216	Unsuited
5250	Unsuited
5351	Unsuited
5357	Unsuited
5654	Unsuited
5754	Unsuited
5923	Unsuited
7122	Unsuited
7170	Unsuited
7173	Unsuited
7222	Unsuited
7270	Unsuited
7273	Unsuited
7377	Unsuited
8122	Unsuited
8150	Unsuited

SMU#	Interpretation
8183	Unsuited
8184	Unsuited
8191	Unsuited
8222	Unsuited
8250	Unsuited
8283	Unsuited
8284	Unsuited
8287	Unsuited
8322	Unsuited
8387	Unsuited
9116	Unsuited
9122	Unsuited
9140	Unsuited
9240	Unsuited
9284	Unsuited

Soil Limitations for Recreation Development

This indicates the major limitations to recreation development.

SMU#	Interpretation
1	Annual local flooding
2	Very shallow soils, rocky terrain
3	Excess wetness, poorly drained, muddy
4	Presence of rock, snow and ice
5a	Steep slopes
5b	Steep slopes
5c	Steep slopes
6	Steep, rock slopes
7	Steep, rugged slopes
8	Steep, dissected slopes
9	Very steep slopes
10	N/A
11	Dusty
12	Fragile surface soils, easily damaged
13	N/A
14	Some local flooding
15	N/A
16	Steep slopes
17	N/A
18	Steep slopes
19	Steep slopes, wet, muddy, unstable
21	N/A
22	Steep slopes
23	Wet

SMU#	Interpretation
24	Soil is unsuited when slopes are steep
25	Severe erosion potential, fragile soils
26	Steep slopes, fragile soils
27	Moderately steep slopes, fragile soils, drainage restrictions
28	Fragile surface soils, drainage restrict
29	Easily erodable, fragile soils
31	Steep slopes
34	Severe erosion potential, fragile soils
35	Steep, dissected slopes
36	Fragile soils
37	Steep slopes
40	Rock outcrop
41	Steep slopes
41T	Steep slopes
42	Steep, dissected slopes
42T	Steep, dissected slopes
44	Local drainage restrictions
45	Severe erosion, fragile soils
46	Fragile, easily damaged, vegetation is easily destroyed, slow recovery
50	Rock outcrop

SMU#	Interpretation
51	Steep slopes
51T	Steep slopes
52	Steep, dissected slopes
53	Steep, unstable slopes
54	Very unstable soils, steep slopes
56	Steep, unstable soils
57	Unstable soils
58	Limited soil depth
59	Very unstable soils, steep slopes
70	Rock outcrop
71	Steep slopes
72	Steep, dissected slopes
73	Moderately steep to steep slopes
74	Steep, unstable slopes
75	Moderately steep slopes locally
77	Moderately steep to steep slopes
81	Steep slopes
82	Steep, dissected slopes
83	Moderately steep to steep slopes
84	Moderately steep to steep slopes
85	Steep slopes

SMU#	Interpretation
87	Steep, unstable slopes
88	Moderately steep slopes locally
89	Unstable, wet, muddy
91	Steep slopes
92	Steep slopes, fragile soils, shallow
93	Dusty, easily eroded
94	Steep slopes, fragile, shallow
1594	N/A
1641	Steep slopes
1642	Steep slopes
1651	Steep slopes
1795	N/A
1841T	Steep slopes
1892	Steep slopes
2324	Wet
2423	N/A
2493	N/A
2640	Fragile soils, steep slopes
2957	Easily erodible, fragile soils
3157	Steep slopes
3429	Easily erodable
3556	Steep slopes, easily erodable
3731	Steep slopes
4116	Steep slopes
41T18	Steep slopes
4140	Steep slopes
41T40	Steep slopes

SMU#	Interpretation
4151	Steep slopes
4216	Steep slopes
42T18	Steep slopes
4240	Steep slopes
42T40	Steep slopes
4603	Soil is fragile, soil and veg. easily damaged, slow recovery, wet, muddy
5116	Steep slopes
51T18	Steep slopes
5150	Steep slopes
51T50	Steep slopes
5216	Steep slopes
5250	Steep slopes
5351	Unstable slopes, steep slopes
5357	Unstable slopes
5654	Unstable, steep slopes
5754	Unstable
5923	Unstable
7122	Steep slopes
7170	Steep slopes
7173	Steep slopes
7222	Steep slopes
7270	Steep slopes
7273	Steep slopes
7377	Steep slopes, unstable
8122	Steep slopes
8150	Steep slopes
8183	Steep slopes

SMU#	Interpretation
8184	Steep slopes, unstable
8191	Steep slopes
8222	Steep slopes
8250	Steep slopes
8283	Steep slopes
8284	Steep slopes
8287	Steep slopes
8322	Steep slopes
8387	Steep slopes
9116	Steep slopes
9122	Steep slopes
9140	Steep slopes
9240	Steep slopes
9284	Steep slopes

Soil and Site Damage Susceptibility

This interpretation applies to recreational areas after development. Each soil that is suitable or can be made suitable for campground development is rated for its susceptibility to damage of soil and/or site by normal recreation use. Site includes vegetation as well as soil conditions. Factors used in determining ratings include erosion potential, soil compactibility, and vegetative growth potential.

Low - These soils resist compaction and have low erosion potential. The native vegetation is hardy and not readily destroyed. These soils will withstand and hold up well under continual use.

Moderate - These soils are not readily compacted or eroded and vegetative types are somewhat hardy. In general, these soils and site can sustain continual use but require some rehabilitation.

High - These soils are fragile and easily damaged and have vegetation that is not hardy, easily damaged and generally herbaceous. Under normal use, the vegetation will very likely be destroyed, the soil compacted and/or eroded to such a degree that period nonuse and major rehabilitation will be required.

SMU#	Interpretation
1	N/A
2	N/A
3	Moderate
4	N/A
5a	Moderate
5b	N/A
5c	High
6	High
7	N/A
8	N/A
9	N/A
10	N/A
11	Low to Moderate
12	Moderate
13	Low
14	Low
15	Low
16	N/A
17	Moderate
18	N/A

SMU#	Interpretation
19	N/A
21	Low
22	N/A
23	Moderate
24	Low
25	High
26	N/A
27	N/A
28	Moderate
29	Moderate
31	N/A
34	High
35	N/A
36	Moderate
37	N/A
40	N/A
41	N/A
41T	N/A
42	N/A
42T	N/A

SMU#	Interpretation
43	Moderate
44	Moderate
45	High
46	High
50	N/A
51	N/A
51T	N/A
52	N/A
53	N/A
54	N/A
56	N/A
57	N/A
58	Moderate
59	N/A
70	N/A
71	N/A
72	N/A
73	N/A
74	N/A
75	Moderate

SMU#	Interpretation
77	N/A
81	N/A
82	N/A
83	N/A
84	N/A
85	Moderate
87	N/A
88	Moderate
89	N/A
91	N/A
92	N/A
93	Moderate
94	Moderate
95	Moderate
1594	Low
1641	N/A
1642	N/A
1651	N/A
1795	Moderate
1841T	N/A
1892	N/A
2324	Low
2423	Low
2493	Low
2640	N/A
2957	Moderate
3157	N/A
3429	High
3556	N/A
3731	Moderate

SMU#	Interpretation
4116	N/A
41T18	N/A
4140	N/A
41T40	N/A
4151	N/A
4216	N/A
42T18	N/A
4240	N/A
42T40	N/A
4603	High
5116	N/A
51T18	N/A
5150	N/A
51T50	N/A
5216	N/A
5250	N/A
5351	N/A
5357	N/A
5654	N/A
5754	N/A
5923	N/A
7122	N/A
7170	N/A
7173	N/A
7222	N/A
7270	N/A
7273	N/A
7377	N/A
8122	N/A
8150	N/A

SMU#	Interpretation
8183	N/A
8184	N/A
8191	N/A
8222	N/A
8250	N/A
8283	N/A
8284	N/A
8287	N/A
8322	Moderate
8387	Moderate
9116	N/A
9122	N/A
9140	N/A
9240	N/A
9284	N/A

Trail Suitability

This interpretation indicates the suitability of each soil for trails. Factors include soil and bedrock characteristics, drainage, climate and slope.

Poor - These soils have properties which severely limit their use for trails. Extensive treatment measures are required.

Moderate - These soils have some limitations for trail development. Certain treatment measures may be required.

Well - These soils have no limitations for trail development.

SMU#	Interpretation
1	Moderate
2	Poor-Moderate
3	Poor
4	Poor
5a	Moderate
5b	Poor
5c	Poor
6	Poor
7	Poor
8	Poor
9	Poor
10	Moderate
11	Well
12	Well
13	Well
14	Well
15	Well
16	Moderate
17	Well
18	Moderate
19	Poor
21	Well
22	Moderate

SMU#	Interpretation
23	Moderate
24	Well
25	Moderate
26	Moderate
27	Moderate
28	Moderate
29	Well
31	Moderate
34	Moderate
35	Poor
36	Well
37	Moderate
40	Poor
41	Moderate
41T	Moderate
42	Moderate
42T	Moderate
43	Well
44	Well
45	Well
46	Moderate
50	Poor
51	Moderate

SMU#	Interpretation
51T	Moderate
52	Moderate
53	Poor
54	Poor
56	Poor
57	Poor
58	Well
59	Poor
70	Poor
71	Moderate
72	Moderate
73	Well
74	Poor
75	Well
77	Poor
81	Moderate
82	Moderate
83	Well
84	Well
85	Well
87	Poor
88	Well
89	Poor

SMU#	Interpretation
91	Moderate
92	Moderate
93	Well
94	Well
95	Well
1594	Well
1641	Moderate
1642	Moderate
1651	Moderate
1795	Well
1841T	Moderate
1892	Moderate
2324	Moderate
2423	Well
2493	Well
2640	Moderate
2957	Well
3157	Moderate
3429	Moderate
3556	Poor
3731	Well
4116	Moderate
41T18	Moderate
4140	Moderate
41T40	Moderate
4151	Moderate
4216	Moderate
42T18	Moderate
4240	Moderate
42T40	Moderate

SMU#	Interpretation
4603	Moderate
5116	Moderate
51T18	Moderate
5150	Moderate
51T50	Moderate
5216	Moderate
5250	Moderate
5351	Poor
5357	Poor
5654	Poor
5754	Poor
5923	Poor
7122	Moderate
7170	Moderate
7173	Moderate
7222	Moderate
7270	Moderate
7273	Moderate
7377	Well
8122	Moderate
8150	Moderate
8183	Moderate
8184	Moderate
8191	Moderate
8222	Moderate
8250	Moderate
8283	Moderate
8284	Moderate
8287	Moderate
8322	Well

SMU#	Interpretation
8387	Moderate
9116	Moderate
9122	Moderate
9140	Moderate
9240	Moderate
9284	Moderate

Limitations for Trails

This indicates the limitations to trails.

SMU#	Interpretation
1	Locally flooded
2	Rough terrain
3	Excess wetness
4	N/A
5a	Steep slopes, loose soils
5b	Steep slopes, loose soils
5c	Steep slopes, loose soils
6	Steep, rock slopes
7	Steep, rugged slopes
8	Difficult stream crossings
8	Trail-bridge washout
9	Unstable, raveling soils
9	Extreme steepness
10	N/A
11	N/A
12	Easily eroded
13	N/A
14	None
15	
16	Steep slopes
17	N/A
18	Steep slopes
19	Steep slopes, wet, muddy
21	N/A
22	Steep slopes

SMU#	Interpretation
23	Wet, muddy
24	N/A
25	Loose soils, erode easily
26	Loose soils, erode easily
27	Highly erodable
28	Highly erodable
29	Easily eroded
31	Steep, easily eroded slopes
34	Highly erodable
35	Very steep and dissected
36	Easily eroded
37	Steep slopes, easily eroded
40	Rock outcrop
41	Steep slopes
41T	Steep slopes
42	Steep, dissected slopes
42T	Steep, dissected slopes
43	N/A
44	N/A
45	N/A
46	Damage to soils from trail use
50	Rock outcrop
51	Steep slopes
51T	Steep slopes

SMU#	Interpretation
52	Steep, dissected slopes
53	Steep slopes, wet, unstable
54	Steep, unstable, fragile surf.
56	Steep, unstable soils
57	Steep, unstable, fragile surf.
58	N/A
59	Steep, unstable, fragile surface
70	Rock outcrop
71	Steep slopes
72	Steep, dissected slopes
73	Steep slopes locally
74	Steep, dissected slopes; unstable; muddy
75	N/A
77	Steep slopes locally
81	Steep slopes
82	Steep, dissected slopes
83	Steep slopes locally
84	Steep slopes locally
85	Steep slopes, muddy
87	Steep, dissected slopes; unstable; muddy
88	N/A
89	Wet, muddy

SMU#	Interpretation
91	Steep slopes
92	Rock outcrops, steep slopes
93	Dusty and erodable
94	Dusty and erodable
1594	N/A
1641	Steep slopes
1642	Steep slopes
1651	Steep slopes
1795	N/A
1841T	Steep slopes
1892	Steep slopes
2324	Wet and muddy
2423	N/A
2493	N/A
2640	Easily eroded
2957	Easily eroded
3157	Steep, easily eroded
3429	Steep, easily eroded
3556	Steep, easily eroded
3731	Steep, easily eroded
4116	Steep slopes
41T18	Steep slopes
4140	Steep slopes
41T40	Steep slopes
4151	Steep slopes
4216	Steep slopes
42T18	Steep slopes
4240	Steep slopes
42T40	Steep slopes
4603	Wetness

SMU#	Interpretation
5116	Steep slopes
51T18	Steep slopes
5150	Steep slopes
51T50	Steep slopes
5216	Steep slopes
5250	Steep slopes
5351	Unstable slopes, wet, muddy
5357	Unstable slopes, wet, muddy
5654	Steep, unstable slopes
5754	Steep, unstable slopes
5923	Steep, unstable slopes
7122	Steep slopes
7170	Steep slopes
7173	Steep slopes
7222	Steep slopes
7270	Steep slopes
7273	Steep slopes
7377	Steep slopes, unstable
8122	Steep slopes
8150	Steep slopes
8183	Steep slopes
8184	Steep slopes, unstable
8191	Steep slopes
8222	Steep slopes
8250	Steep slopes
8283	Steep slopes
8284	Steep slopes

SMU#	Interpretation
8287	Steep slopes
8322	Steep slopes
8387	Steep slopes, unstable, muddy
9116	Steep slopes
9122	Steep slopes
9140	Steep slopes
9240	Steep slopes
9184	Steep slopes

Potential for Regeneration

This interpretation indicates the potential for each mapping unit to regenerate at a minimum level of stocking as set by the Forest Service. Factors included in this interpretation are soil characteristics, climate, aspect, elevation, frost potential, brush competition, and tree species.

Low - This rating indicates the potential for regeneration is low. Probability of success is very limited. Major regeneration problems can be expected and reseeding or replanting may be required throughout the area. Several years may elapse before an adequate stocking level is achieved.

Moderate - This rating indicates that some problems will be encountered in attaining a satisfactory stocking level. Usually regeneration is spotty and some replanting will be necessary.

High - This rating indicates that regeneration has a probability of success. Few problems should be encountered in attaining good stocking levels.

NC - Noncommercial lands

SMU#	Interpretation
1	N/C
2	N/C
3	N/C
4	N/C
5a	Low
5b	Low
5c	N/C
6	N/C
7	N/C
8	N/C
9	N/C
10	N/C
11	Low-Moderate
12	Moderate
13	High
14	High
15	Moderate
16	Moderate
17	Low to Moderate
18	Low to Moderate

SMU#	Interpretation
19	Moderate
21	Moderate
22	Moderate
23	Low to Moderate
24	Low to Moderate
25	Low to Moderate
26	Low to Moderate
27	High
28	High
29	Low to Moderate
31	Low to Moderate
34	Low to Moderate
35	Low to Moderate
36	Moderate
37	Moderate
40	N/C
41	Low to Moderate
41T	Low to Moderate
42	Low to Moderate
42T	Low to Moderate

SMU#	Interpretation
43	Moderate
44	Moderate
45	Low
46	N/C
50	N/C
51	Moderate
51T	Low to Moderate
52	Low-Moderate
53	Moderate
54	Moderate
56	Moderate
57	Moderate-High
58	Moderate
59	Moderate
70	N/C
71	Moderate
72	Moderate
73	Moderate
74	Low to Moderate
75	Moderate to High

SMU#	Interpretation
77	Moderate to High
81	Low to Moderate
82	Low to Moderate
83	Moderate
84	Low to Moderate
85	Moderate
87	Moderate to High
88	Moderate
89	Moderate to High
91	Moderate
92	Low to Moderate
93	Moderate
94	Moderate
95	Low to Moderate
1594	Moderate
1641	Moderate
1642	Moderate
1651	Moderate
1795	Low to Moderate
1841T	Low to Moderate
1892	Low to Moderate
2324	Low to Moderate
2423	Low to Moderate
2493	Low to Moderate
2640	Low to Moderate
2957	Moderate
3157	Moderate
3429	Low to Moderate
3556	Moderate to Low
3731	Moderate

SMU#	Interpretation
4116	Low to Moderate
41T18	Low to Moderate
4140	Low to Moderate
41T40	Low
4151	Low to Moderate
4216	Moderate
42T18	Low to Moderate
4240	Low to Moderate
42T40	Low
4603	N/C
5116	Moderate
51T18	Moderate
5150	Low to Moderate
51T50	Low
5216	Low to Moderate
5250	Low to Moderate
5351	Low to Moderate
5357	Moderate to High
5654	Moderate
5754	Moderate to High
5923	Moderate
7122	Moderate
7170	Low to Moderate
7173	Moderate
7222	Moderate
7270	Low to Moderate
7273	Moderate
7377	Moderate to High
8122	Moderate
8150	Low to Moderate

SMU#	Interpretation
8183	Moderate
8184	Low to Moderate
8191	Moderate
8222	Moderate
8250	Low to Moderate
8283	Moderate
8284	Low to Moderate
8287	Moderate
8322	Moderate
8387	Moderate to High
9116	Moderate
9122	Moderate
9140	Low to Moderate
9240	Low to Moderate
9284	Low to Moderate

Timber Harvest Guidelines - (Yes or No)

Soil mapping units interpreted as "no" harvest align with timberland suitability classification (FSM 2415.2), which are water, nonforest, or unproductive. See "Soil Mapping Unit Suffixes" for "not suitable" land. "Yes" implies that harvest may occur on these areas. Slopes in excess of 90 percent should be reviewed carefully for erosion and stability concerns.

SMU#	Interpretation
1	No
2	No
3	No
4	No
5a	Yes
5b	Yes
5c	No
6	No
7	No
8	No
9	No
10	No
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
21	Yes
22	Yes
23	Yes
24	Yes
25	Yes

SMU#	Interpretation
26	Yes
27	Yes
28	Yes
29	Yes
31	Yes
34	Yes
35	Yes
36	Yes
37	Yes
40	No
41	Yes
41T	Yes
42	Yes
43	Yes
44	Yes
45	Yes
46	No
50	No
51	Yes
51T	Yes
52	Yes
53	Yes
54	Yes
56	Yes
57	Yes
58	Yes

SMU#	Interpretation
59	Yes
70	No
71	Yes
72	Yes
73	Yes
74	Yes
75	Yes
77	Yes
78	Yes
81	Yes
82	Yes
83	Yes
84	Yes
85	Yes
87	Yes
88	Yes
89	Yes
91	Yes
92	Yes
93	Yes
94	Yes
95	Yes
1594	Yes
1641	Yes
1642	Yes
1651	Yes

SMU#	Interpretation
1795	Yes
1841T	Yes
1892	Yes
2324	Yes
2423	Yes
2493	Yes
2640	Yes
2957	Yes
3157	Yes
3429	Yes
3556	Yes
3731	Yes
4116	Yes
41T18	Yes
4140	Yes
4151	Yes
4216	Yes
42T18	Yes
4240	Yes
42T40	Yes
4603	No
5116	Yes
51T18	Yes
5150	Yes
51T50	Yes
5216	Yes
5250	Yes
5351	Yes
5357	Yes
5654	Yes

SMU#	Interpretation
5754	Yes
5923	Yes
7122	Yes
7170	Yes
7173	Yes
7222	Yes
7270	Yes
7273	Yes
7377	Yes
8122	Yes
8150	Yes
8183	Yes
8184	Yes
8191	Yes
8222	Yes
8250	Yes
8283	Yes
8284	Yes
8287	Yes
8322	Yes
8387	Yes
9116	Yes
9122	Yes
9140	Yes
9240	Yes
9284	Yes

Tractor - "Yes" - Tractor logging is permitted within the slope restrictions described for each soil mapping unit.

SMU#	Interpretation
1	N/A
2	N/A
3	N/A
4	N/A
5a	<20%
5b	No
5c	N/A
6	N/A
7	N/A
8	N/A
9	N/A
10	N/A
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	No
17	Yes
18	No
19	No
21	Yes
22	No
23	Yes
24	Yes
25	<20%
26	No
27	Yes
28	Yes

SMU#	Interpretation
29	Yes
31	No
34	<20%
35	No
36	Yes
37	No
40	N/A
41	No
41T	No
42	No
42T	No
43	Yes
44	No
45	Yes
46	N/A
50	N/A
51	No
51T	No
52	No
53	No
54	<30%
56	No
57	<30%
58	Yes
59	No
70	N/A
71	No
72	No
73	No

SMU#	Interpretation
74	No
75	Yes
77	No
81	No
82	No
83	No
84	No
85	Yes
87	No
88	Yes
89	No
91	No
92	No
93	Yes
94	Yes
95	Yes
1594	Yes
1641	No
1642	No
1651	No
1795	Yes
1841T	No
1892	No
2324	Yes
2423	Yes
2493	Yes
2640	No
2957	Yes
3157	No

SMU#	Interpretation
3429	<20%
3556	No
3731	No
4116	No
41T18	No
4140	No
41T40	No
4151	No
4216	No
42T18	No
4240	No
42T40	No
4603	N/A
5116	No
51T18	No
5150	No
51T50	No
5216	No
5250	No
5351	No
5357	No
5654	No
5754	<30%
5923	No
7122	No
7170	No
7173	No
7222	No
7270	No
7273	No

SMU#	Interpretation
7377	No
8122	No
8150	No
8183	No
8184	No
8191	No
8222	No
8250	No
8283	No
8284	No
8287	No
8322	No
8387	No
9116	No
9122	No
9140	No
9240	No
9284	No

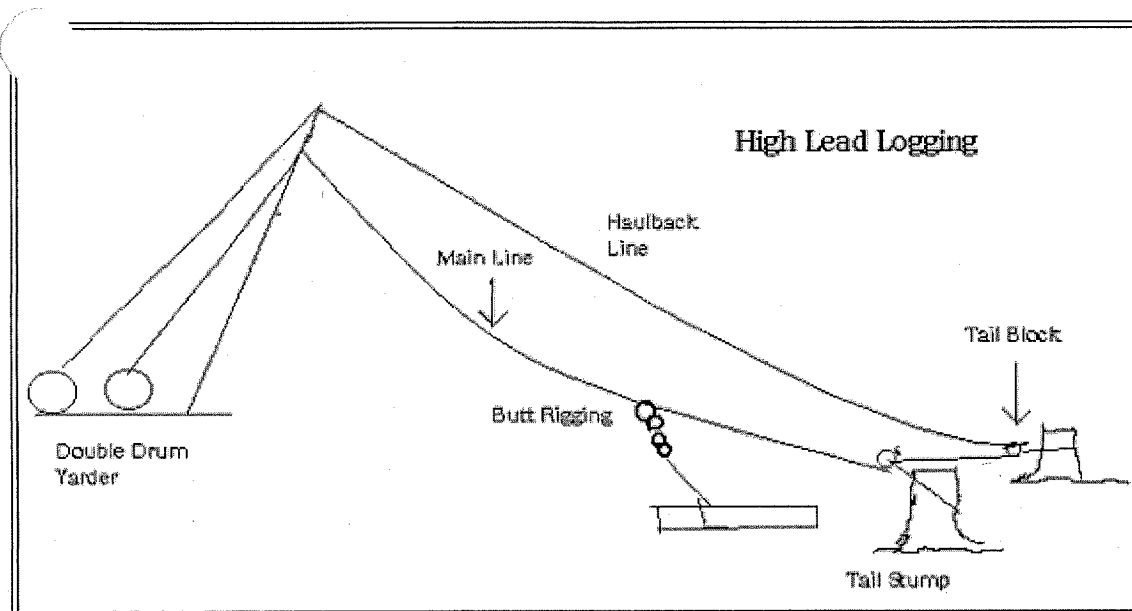
High Lead - "Yes" - High lead logging is permitted within the slope restrictions described for each soil mapping unit.

SMU#	Interpretations
1	N/A
2	N/A
3	N/A
4	N/A
5a	Yes
5b	<60%
5c	N/A
6	N/A
7	N/A
8	N/A
9	N/A
10	N/A
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	<60%
17	Yes
18	<60%
19	<40%
21	Yes
22	<60%
23	Yes
24	Yes
25	Yes
26	<60%
27	Yes
28	Yes

SMU#	Interpretations
29	Yes
31	<60%
34	Yes
35	No
36	Yes
37	<60%
40	N/A
41	<60%
41T	<60%
42	<60%
42T	<60%
43	<60%
44	<60%
45	Yes
46	N/A
50	N/A
51	<60%
51T	<60%
52	<60%
53	<40%
54	Yes
56	No
57	<60%
58	Yes
59	<40%
70	N/A
71	<60%
72	<60%
73	<60%

SMU#	Interpretations
74	<60%
75	Yes
77	<60%
81	<60%
82	<60%
83	<60%
84	<60%
85	Yes
87	<60%
88	Yes
89	Yes
91	<60%
92	<60%
93	Yes
94	Yes
95	Yes
1594	Yes
1641	<60%
1642	<60%
1651	<60%
1795	Yes
1841T	<60%
1892	<60%
2324	Yes
2423	Yes
2493	Yes
2640	<60%
2957	Yes
3157	<60%

High Lead Cable System



Shown here is a drawing of what is known as the "High Lead Logging" configuration. Here the lower main line is used for the skidding line. The upper secondary line is looped out around the woods with several blocks on the back side of the job. As the area is logged the blocks are disconnected one at a time, causing the main line to realign

itself with the next tail block, thus changing roads.

No carriage is required in this configuration, just butt rigging. This doesn't have to be anything fancy, but is the place where the main line, the haulback line and the chokers all come together. This is essentially a ground logging system, in that the logs normally drag on the ground on their way to the landing. It is called 'high lead' because the main line is elevated and this assists the logs in riding over obstacles.

In many ways, the high lead system is simply 2 winch lines: One to drag logs in to the machine and a second to drag the winch line back out in the woods. Unlike the shotgun system, it will work on flat ground, and in locations where it is not possible to get enough deflection to keep the yarding lines off the ground. The rigging is simple, and only a 2 drum machine is required. the useful distance for this logging method is usually recognized as being 800 feet, with occasional reaches to 1000 feet for long corners. It is best used for uphill logging, usable on the flat and nearly unusable on downhill logging, because in the latter configuration you are pulling the logs down into the obstacles assuring that you will never get a log to pull free.

This method has been around for a long time, and is just one step improved from a single drum yarder which required the cable to be pulled out by hand or with a horse. It is the principal alternative available on a 2 drum machine where a shotgun system won't work. Other systems need three lines, though the North Bend system uses a standing skyline which is never lowered so you can pull up a skyline and either tie it off or anchor it to a dozer or even a second yarder since no ability to raise or lower the skyline is required during the logging operation.

[VanNatta Forestry and Logging Page](#)| [Logging History](#)| [Big Iron](#)| [Skidders and Forwarders](#)| [Log Loaders](#)| [VanNatta BullDozer](#)| [Logging Roads](#)| [VanNatta Truck Museum](#)| [Logging Tools](#)| [Shop Tools](#)| [Farming Stuff](#)| [The VanNatta Homepage](#)| [Van Natta Computer History](#)| [25 West Oregon Communities](#)| [Nifty Pictures](#)| [Camera Equipment](#)| [Native Plant guide](#)

- Updated 04/20/2008
- Updated 2/6/01
- Updated 03/08/2008
- Updated 03/16/2008

SMU#	Interpretations
3429	Yes
3556	No
3731	<60%
4116	<60%
41T18	<60%
4140	<60%
41T40	<60%
4151	<60%
4216	<60%
42T18	<60%
4240	<60%
42T40	<60%
4603	N/A
5116	<60%
51T18	<60%
5150	<60%
51T50	<60%
5216	<60%
5250	<60%
5351	<60%
5357	<60%
5654	No
5754	Yes
5923	<30%
7122	<60%
7170	<60%
7173	<60%
7222	<60%
7270	<60%
7273	<60%

SMU#	Interpretations
7377	<60%
8122	<60%
8150	<60%
8183	<60%
8184	<60%
8191	<60%
8222	<60%
8250	<60%
8283	<60%
8284	<60%
8287	<60%
8322	<60%
8387	<60%
9116	<60%
9122	<60%
9140	<60%
9240	<60%
9284	<60%

Suspended Logging Systems - Suspended logging systems, including skyline, helicopter, or balloon are recommended on slopes described below for each soil mapping unit.

SMU#	Interpretation
1	N/A
2	N/A
3	N/A
4	N/A
5a	N/A
5b	<100%
5c	N/A
6	N/A
7	N/A
8	N/A
9	N/A
10	N/A
11	N/A
12	N/A
13	N/A
14	N/A
15	N/A
16	<100%
17	N/A
18	<100%
19	>40%
21	N/A
22	<100%
23	N/A
24	<100%
25	N/A
26	<100%
27	N/A
28	N/A

SMU#	Interpretation
29	N/A
31	<100%
34	N/A
35	<100%
36	N/A
37	<100%
40	N/A
41	<100%
41T	<100%
42	<100%
42T	<100%
43	N/A
44	<100%
45	N/A
46	N/A
50	N/A
51	<100%
51T	<100%
52	<100%
53	>40%
54	N/A
56	<60%
57	<100%
58	N/A
59	<60%
70	N/A
71	<100%
72	<100%
73	<100%

SMU#	Interpretation
74	<100%
75	N/A
77	<100%
81	<100%
82	<100%
83	<100%
84	<100%
85	N/A
87	<100%
88	N/A
89	N/A
91	<100%
92	<100%
93	N/A
94	N/A
95	N/A
1594	N/A
1641	<100%
1642	<100%
1651	<100%
1795	N/A
1841T	<100%
1892	<100%
2324	N/A
2423	N/A
2493	<100%
2640	<100%
2957	N/A
3157	<100%

SMU#	Interpretation
3429	N/A
3556	<100%
3731	<100%
4116	<100%
41T18	<100%
4140	<100%
41T40	<100%
4151	<100%
4216	<100%
42T18	<100%
4240	<100%
42T40	<100%
4603	N/A
5116	<100%
51T18	<100%
5150	<100%
51T50	<100%
5216	<100%
5250	<100%
5351	>40%
5357	>40%
5654	<100%
5754	<100%
5923	>40%
7122	<100%
7170	<100%
7173	<100%
7222	<100%
7270	<100%
7273	<100%

SMU#	Interpretation
7377	<100%
8122	<100%
8150	<100%
8183	<100%
8184	<100%
8191	<100%
8222	<100%
8250	<100%
8283	<100%
8284	<100%
8287	<100%
8322	<100%
8387	<100%
9116	<100%
9122	<100%
9140	<100%
9240	<100%
9284	<100%

Road Location Guidelines

Road construction is generally permitted within the slope restrictions described for each soil mapping unit. "No" suggests that resource impacts would be unacceptable. Proposed road location outside the interpretation range would warrant further review. Field review may reveal that the area can be crossed with a road within the allowable impact and economic constraints. Remember that the mapping usually originated from one inch to the mile photo and locally within a mapped area. The situation may not fit the mapping unit description or be within the guideline limits.

A - Minimum frequency on slopes of greater than 60%.

B - Minimum frequency on slopes between 30% and 60%.

C - Minimum frequency

Minimum frequency is a suggestion that transportation planning will occur in the area to assure that road location and design will meet environmental objectives first and foremost.

SMU#	Interpretation
1	Yes
2	Yes
3	No
4	N/A
5a	Yes
5b	<60%
5c	<60%
6	No
7	No
8	No
9	No
10	No
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	<60% (A)
17	Yes
18	<60% (A)

SMU#	Interpretation
19	<60% (B)
21	Yes
22	<60% (A)
23	Yes
24	Yes
25	Yes
26	<60% of (B)
27	Yes
28	Yes
29	Yes
31	<60% (A)
34	Yes
35	No
36	Yes
37	<60% (B)
40	No
41	<60% (A)
41T	<60% (A)
42	<60% (A)
42T	<60% (A)

SMU#	Interpretation
43	Yes
44	<60% (A)
45	Yes
46	<60%
50	No
51	<60% (A)
5T	<60% (A)
52	<60% (A)
53	<60% (C)
54	<30% (C)
56	No
57	<60% (C)
58	Yes
59	<30% (C)
70	No
71	<60% (A)
72	<60% (A)
73	<60% (A)
74	<30% (A)
75	Yes

SMU#	Interpretation
77	<60% (C)
81	<60% (A)
82	<60% (A)
83	<60% (A)
84	<60% (A)
85	Yes
87	<60% (C)
88	Yes
89	<60% (C)
91	<60% (A)
92	<60% (A)
93	Yes
94	Yes
95	Yes
1594	Yes
1641	<60% (A)
1642	<60% (A)
1651	<60% (A)
1795	Yes
1841T	<60% (A)
1892	<60% (A)
2324	Yes
2423	Yes
2493	Yes
2640	<60% (B)
2957	Yes
3157	<60% (A)
3429	Yes
3556	No
3731	<60% of (B)

SMU#	Interpretation
4116	<60% (A)
41T18	<60% (C)
4140	<60% (A)
41T40	<60% (A)
4151	<60% (A)
4216	<60% (A)
42T18	<60% (A)
4240	<60% (A)
42T40	<60% (A)
4603	<60%
5116	<60% (A)
51T18	<60% (A)
5150	<60% (A)
51T50	<60% (A)
5216	<60% (A)
5250	<60% (A)
5351	<60% (C)
5357	<60% (C)
5654	No
5754	<60% (C)
5923	<30% (C)
7122	<60% (A)
7170	<60% (A)
7173	<60% (A)
7222	<60% (A)
7270	<60% (A)
7273	<60% (A)
7377	<60% (A)
8122	<60% (A)
8150	<60% (A)

SMU#	Interpretation
8183	<60% (A)
8184	<60% (A)
8191	<60% (A)
8222	<60% (A)
8250	<60% (A)
8283	<60% (A)
8284	<60% (A)
8287	<60% (A)
8322	<60% (A)
8387	<60% of (C)
9116	<60% (A)
9122	<60% (A)
9140	<60% (A)
9184	<60% (A)
9240	<60% (A)

Probability of Cutbank Failures

This interpretation based on observed existing conditions indicates the probability of failures in cutbanks following road construction or excavation for buildings. Failures are considered to be at least 10 cubic yards of material in volume. Ratings are based on cutbanks of at least 10 feet in height and refer to more than a 50 percent chance for failures.

I. *Very Stable* - Practically no probability chance of cutbank failures.

II. *Stable* - Probability of no more than 3 failures per mile of road cutbank.

III. *Moderately Stable* - Probability of 4 to 8 failures per mile of road cutbank.

IV. *Unstable* - Probability of 9 to 15 failures per mile of road cutbank.

V. *Very Unstable* - Probability of more than 15 failures per mile of road cutbanks.

SMU#	Interpretation
1	II
2	I
3	II
4	N/A
5a	II
5b	II
5c	II
6	II
7	II
8	II
9	III & IV
10	II
11	I
12	II-III
13	II
14	I
15	I
16	II
17	I
18	II

SMU#	Interpretation
19	III
21	I
22	II
23	II
24	II
25	II
26	III
27	II
28	II
29	I
31	II
34	II
35	III
36	II
37	II
40	I-II
41	II
41T	II
42	II
42T	II

SMU#	Interpretation
43	I
44	II
45	I-II
46	I-II
50	II
51	II
51T	II
52	II
53	III
54	III
56	IV-V
57	III
58	I
59	IV
70	II
71	II
72	II
73	III
74	III
75	I

SMU#	Interpretation
77	III-IV
81	II
82	II
83	III
84	III
85	I
87	III-IV
88	II
89	III-IV
91	II
92	II
93	I
94	I
95	I
1594	I
1641	II
1642	II
1651	II
1795	I
1841T	II
1892	II
2324	II
2423	II
2493	II
2640	III
2957	I-III
3157	II-III
3429	I-II
3556	III-IV
3731	II

SMU#	Interpretation
4116	II
41T18	II
4140	II
41T40	II
4151	II
4216	II
42T18	II
4240	II
42T40	II
4603	I-II
5116	II
51T18	II
5150	II
51T50	II
5216	II
5250	II
5351	II-III
5357	III
5654	IV-V
5754	III
5923	III-IV
7122	II
7170	II
7173	II
7222	II
7270	II
7273	II-III
7377	III-IV
8122	II
8150	II

SMU#	Interpretation
8183	II
8184	II
8191	II
8222	II
8250	II
8283	II-III
8284	II-III
8287	III-IV
8322	II-III
8387	III-IV
9116	II
9122	II
9140	II
9240	II
9284	II-III

Susceptibility to Cutbank Sloughing and Raveling

This rating evaluates each unit for its susceptibility to sloughing or raveling after excavation. Ratings are based on cutbacks at least 10 feet high. Factors include soil and bedrock characteristics, backslope ratio, frost action, climate and potential for revegetation.

Low - Sloughing and/or raveling is a minor problem requiring occasional road maintenance.

Moderate - Sloughing and/or raveling causes some damage. Annual road maintenance is usually adequate.

High - Sloughing and raveling occur at a rate that often plugs culverts and fills inside ditches. Frequent road maintenance with heavy equipment such as front-end loader is required.

SMU#	Interpretation
1	High
2	Low
3	Moderate
4	N/A
5a	Moderate
5b	Moderate
5c	Moderate
6	Low
7	Low to Moderate
8	Moderate
9	High
10	High
11	Low
12	Low
13	Moderate
14	Low
15	Low
16	Low
17	Low
18	Low
19	Moderate
21	Low

SMU#	Interpretation
22	Low
23	Low
24	Low
25	High
26	High
27	Moderate
28	Moderate
29	Low
31	Low
34	Moderate
35	High
36	Low to Moderate
37	Moderate to High
40	Low
41	Low
41T	Low
42	Low
42T	Low
43	Low
44	Low to Moderate
45	Low
46	Low

SMU#	Interpretation
50	Low
51	Low
51T	Low
52	Low
53	Moderate
54	Moderate to High
56	High
57	Moderate to High
58	Low
59	High
70	Low
71	Moderate
72	Moderate
73	Moderate
74	Moderate
75	Low
77	High
81	Moderate
82	Moderate
83	Moderate
84	Moderate
85	Low

SMU#	Interpretation
87	High
88	Low
89	Moderate to High
91	Low
92	Low
93	Low
94	Low
95	Low
1594	Low
1641	Low
1642	Low
1651	Low
1795	Low
1841T	Low
1892	Low
2324	Low
2423	Low
2493	Low
2640	High
2957	Low
3157	Low
3429	Moderate
3556	High
3731	Moderate to Low
4116	Low
41T18	Low
4140	Low
41T40	Low
4151	Low
4216	Low

SMU#	Interpretation
42T18	Low
4240	Low
42T40	Low
4603	Low
5116	Low
51T18	Low
5150	Low
51T50	Low
5216	Low
5250	Low
5351	Moderate
5357	Moderate
5654	High
5754	Moderate to High
5923	High
7122	Moderate
7170	Moderate
7173	Moderate
7222	Moderate
7270	Moderate
7273	Moderate
7274	Moderate
7277	Moderate
7322	Moderate
7377	Moderate
8122	Moderate
8150	Moderate
8183	Moderate
8184	Moderate
8191	Moderate

SMU#	Interpretation
8222	Moderate
8250	Moderate
8283	Moderate
8284	Moderate
8287	Moderate
8322	Moderate
8387	Moderate
9116	Low
9122	Low
9140	Low
9240	Low
9284	Low

Planning Land Class

Land Class was used in Forest Planning as a means to describe the Forest land base, cumulative effects, and transportation costs.

- 1A. Deep ash/pumice soil landforms on gentle slopes
- 1B. Deep ash/pumice soil landforms on steep slopes
- 2. Gentle sloping landforms
- 3. Steep, non-dissected sideslope landforms
- 4. Steep, dissected sideslope landforms
- 5. Unstable landforms
- 6. Nonforest/Unproductive landforms

2 through 6 are landforms where ash/pumice surface layers are thin or nonexistent.

SMU#	Interpretation
1	6
2	6
3	6
4	6
5a	1A
5b	1B
5c	6
6	6
7	6
8	6
9	6
10	6
11	2
12	1A
13	1A
14	2
15	2
16	3
17	2
18	3
19	5

SMU#	Interpretation
21	2
22	3
23	2
24	2
25	1A
26	1B
27	1A
28	1A
29	1A
31	3
34	1A
35	4
36	1A
37	1B
40	6
41	3
41T	3
42	4
42T	4
43	2
44	3

SMU#	Interpretation
45	2
46	6
50	6
51	3
51T	3
52	4
53	5
54	5
56	5
57	5
58	2
59	5
70	6
71	3
72	4
73	3
74	3
75	2
77	5
81	3
82	4

SMU#	Interpretation
83	3
84	3
85	2
87	5
88	2
89	5
91	3
92	3
93	2
94	2
95	2
1594	2
1641	3
1642	4
1651	3
1795	2
1841T	3
1892	3
2324	2
2423	2
2493	2
2640	1B
2957	2
3157	3
3429	1A
3556	4
3731	3
4116	3
41T18	3
4140	3

SMU#	Interpretation
41T40	3
4151	3
4216	4
42T18	4
4240	4
42T40	4
4603	6
5116	3
51T18	3
5150	3
51T50	3
5216	4
5250	4
5351	5
5357	5
5654	5
5754	5
5923	5
7122	3
7170	3
7173	3
7222	4
7270	4
7273	4
7377	5
8122	3
8150	3
8183	3
8184	3
8191	3

SMU#	Interpretation
8222	4
8250	4
8283	4
8284	4
8287	4
8322	3
8387	5
9116	3
9122	3
9140	3
9240	3
9284	3

Inherent Stability Factor

This rating is an index (factor) used to evaluate the inherent stability of a watershed in the Forest Cumulative Effect Process.

SMU#	Interpretation
1	1
2	1
3	1
4	14
5a	1
5b	5
5c	3
6	8
7	8
8	8
9	10
10	10
11	1
12	5
13	5
14	1
15	3
16	5
17	3
18	5
19	14
21	5
22	5
23	5
24	5
25	1
26	5

SMU#	Interpretation
27	10
28	5
29	1
31	5
34	5
35	10
36	5
37	5
40	5
41	5
41T	5
42	5
42T	5
43	1
44	5
45	3
46	3
50	5
51	5
51T	5
52	5
53	14
54	20
56	17
57	19
58	1
59	19

SMU#	Interpretation
70	5
71	5
72	5
73	8
74	8
75	3
77	17
81	5
82	5
83	8
84	8
85	3
87	17
88	5
89	17
91	5
92	5
93	1
94	1
95	1
1594	3
1641	5
1642	5
1651	5
1795	3
1841T	5
1892	5

SMU#	Interpretation
2324	3
2423	3
2493	1
2640	5
2957	8
3157	10
3429	3
3556	14
3731	8
4116	5
41T18	5
4140	5
41T40	5
4151	5
4216	6
42T18	6
4240	6
42T40	6
4603	3
5116	5
51T18	5
5150	5
51T50	5
5216	6
5250	6
5351	14
5357	19
5654	19
5754	18
5923	14

SMU#	Interpretation
7122	5
7170	5
7173	8
7222	6
7270	6
7273	8
7377	14
8122	5
8150	5
8183	8
8184	8
8191	5
8222	6
8250	6
8283	8
8284	8
8287	14
8322	8
8387	14
9116	5
9122	5
9140	5
9240	5
9284	8

**FOREST AND DISTRICT
ACRE BY SOIL MAPPING UNIT**

**FOREST AND DISTRICT
ACRE BY SOIL MAPPING UNIT**

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
Q	70	100	60	180	100	510
W	3,600	510	1,560	630	180	6,480
1	7,645	185	695	930	375	9,830
2	4,885	15,510		680	1,415	22,490
3	1,205	5,810	2,435	1,555	1,465	12,470
4	8,760	7,860	3,810			20,430
5A		215			15	230
5B		2,005			190	2,195
5C		305				305
6	5,080	12,035	25,275	10,335	110	53,835
6E				675		675
6K	580		770	3,515		4,865
7	6,690	4,010	14,560	13,290	11,155	49,705
7E	2,605	540	5,025	3,215	860	12,245
7F	5				20	25
7K			615	160		775
8	2,770	610	7,105	4,310	355	15,150
8E	2,070		4,440	2,470	380	9,360
8F	90	5				95
8K			45	95		140
9	560	30				590

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
9E	490					490
10	16,145					16,145
11	10,190					10,190
12	6,970	1,745		3,230	700	12,645
13				5,015		5,015
14		4,265	555	65	890	5,775
15	295	235	24,015	12,435	100	37,080
16	85		8,410	3,630		12,125
17	810	32,175	16,530	8,800	3,490	61,805
18	240	1,860	4,985	3,760		10,845
19			3,335	1,575		4,910
19E			100	165		265
19F			245	240		485
19S			60			60
21		1,770		1,750	4,830	8,350
21N				5		5
22		130		345	1,405	1,880
23	355	14,060		215	5,780	20,410
23E				110		110
24		13,715			5,350	19,065
25	3,745	5		11,320	8,925	23,995
26	7,830			17,975		25,805
27			30	7,860		7,890
28				2,320	105	2,425

SMU ACRES

XIII - 2

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
29	8,470	5,340		2,350	2,375	18,535
29N	5					5
31	29,890	4,685		10,235	3,000	47,810
33				20		20
34	14,235	70		3,735	50	18,090
35	11,460	15		9,835	230	21,540
36	4,500			1,260		5,760
37	4,995	95		3,565	315	8,970
38F				70		70
40	10	55	225	360	535	1,185
41	1,150	370	15,180	15,640	1,075	33,415
41N			5	20		25
41T			2,510	2,410		4,920
42	170		1,115	1,565	665	3,515
42T						0
43	8,975				3,535	12,510
44	845				405	1,250
45		30,570	5,590	11,005	15	47,180
46	550	21,440	1,485	205		23,680
46F		410	815	80		1,305
50	20	10	170	225	95	520
51	180	1,310	18,640	12,445		32,575
51T			680			680
51N			10			10

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
52	10		505	1,445		1,960
53		135	1,230	2,060		3,425
54	1,775	110	195	805	745	3,630
54A				270		270
54B				285		285
54F	140	180		435		755
56	575	465	5	135	245	1,425
56F	735	520	225	50	135	1,665
56N	25			10		35
56S	5	30		15		50
57	7,575	3,665	540	1,755	390	13,925
57A		170		335		505
57B		25		2,465		2,490
58	310	995	12,260	2,905	3,015	19,485
59		4,950			1,900	6,850
70						0
71				32,660		32,660
72				11,020		11,020
72N				15		15
73				2,025		2,025
74				65		65
75		5		100	3,140	3,245
77				1,465		1,465
77F				30		30

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
81		5,490			41,245	46,735
82		1,780			19,315	21,095
83		3,535			13,980	17,515
84					2,925	2,925
85					2,690	2,690
87		870			3,160	4,030
87F		15			105	120
88		4,880			8,895	13,775
89					1,015	1,015
91		5,680			11,695	17,375
92		5,615			14,665	20,280
92R					125	125
93		8,250				8,250
94		3,100			7,655	10,755
95		7,155			1,125	8,280
95R		1,525				1,525
1594		13,720			5,375	19,095
1641			6,115	6,165		12,280
1642			315	445		760
1651			450	275		725
1795		11,125			145	11,270
1841T			350	1,135		1,485
1892		2,905			455	3,360
2324		1,210			760	1,970

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
2423		3,615				3,615
2493		5,080				5,080
2640	2,175			2,865		5,040
2957	180	230				410
3157	13,995	8,410			2,600	25,005
3429	1,180	15		970		2,165
3556	890	495		2,590		3,975
3731	17,390	15		695		18,100
4116			14,130	6,410		20,540
41T18	580	140	6,000	5,015		11,735
4140	2,040	320	13,940	12,005	940	29,245
41T40			8,210	2,080		10,290
4151			790	1,330	305	2,425
4216			565	1,880		2,445
42T18	2,060		330	820		3,210
4240			1,120	4,540	235	5,895
42T40			1,355			1,355
4603		220	5,860	5		6,085
5116	6,665		18,565	8,600		33,830
51T18	395		5,230	4,625		10,250
5150	270	145	5,435	5,780	100	11,730
51T50			745	470		1,215
5216	35		1,200	1,230		2,465
5250	110		385	255		750

SMU ACRES

XIII - 6

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
5351			4,165	3,640		7,805
5357		110	655	1,740		2,505
5654	7,250	495		3,550	705	12,000
5754	5,170	5		3,060		8,235
5923		2,490			920	3,410
7122				2,595		2,595
7170				5,330		5,330
7173				2,285		2,285
7222				4,435		4,435
7270				5,085		5,085
7273				7,115		7,115
7377				2,495		2,495
8122					2,985	2,985
8150		670			2,295	2,965
8183		2,910			3,925	6,835
8184		175			345	520
8181					200	200
8222		575			425	1,000
8250		1,290			1,640	2,930
8283		275			2,405	2,680
8284					1,195	1,195
8287		1,220			3,445	4,665
8322		1,330			3,535	4,865
8387		7,490			10,065	17,555

Soil Mapping Unit	Monument	Mt. Adams	Packwood	Randle	Wind River	Forest Total
9116		1,950			295	2,245
9122		50			385	435
9149		2,150			3,160	5,310
9240		1,220			1,635	2,855
9284					865	865
TOTAL	247,090	314,645	280,335	368,935	249,715	1,460,720