APPENDICES

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APPENDIX A – Key To MAP 3-4, Geology

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Appendix A – Key to Map 3-4, Geology

MAP UNIT	LITH	DESCRIPTION
QTb	Volcanic	Basalt (Pleistocene and Pliocene)
QTba	Volcanic	Basalt and Basaltic Andesite (Pleistocene and Pliocene)
QTib	Volcanic	Intrusive Basalt and Andesite (Pleistocene, Pliocene, and Miocene)
QTmv	Volcanic	Mafic Vent Complexes (Pleistocene; Pliocene; and Miocene?)
QTp	Volcanic	Pyroclastic Rocks Of Basaltic and Andesitic Cinder Cones: Basaltic and Andesitic Ejecta
QTps	Volcanic	Pyroclastic Rocks Of Basaltic and Andesitic Cinder Cones: Subaqueous Basaltic and Andesitic Ejecta
QTs	Sedimentary	Sedimentary Rocks (Pleistocene and Pliocene)
QTvm	Volcanic	Mafic Vent Deposits (Pleistocene; Pliocene; and Miocene?)
QTvs	Volcanic	Silicic Vent Deposits (Pleistocene and Pliocene)
Qa	Volcanic	Andesite (Holocene and Pleistocene)
Qal	Sedimentary	Alluvial Deposits
Qb	Volcanic	Basalt and Basaltic Andesite (Holocene and Pleistocene)
Qba	Volcanic	Basaltic Andesite and Basalt (Holocene)
Qf	Sedimentary	Fanglomerate (Holocene? and Pleistocene)
Qg	Sedimentary	Glacial Deposits
Qma	Volcanic	Mazama Ash Deposits (Holocene)
Qmp	Volcanic	Mazama Pumice Deposits (Holocene)
Qrd	Volcanic	Rhyolite and Dacite (Holocene and Pleistocene)
Qs	Sedimentary	Lacustrian and Fluvial Sedimentary Rocks (Pleistocene)
Tb	Volcanic	Basalt (Upper and Middle Miocene)
Tmv	Sedimentary And Volcanic	Mafic Vent Complexes (Miocene)
Tob	Sedimentary And Volcanic	Olivine Basalt (Pliocene and Miocene)
Tp	Sedimentary And Volcanic	Pyroclastic Rocks Of Basaltic Cinder Cones (Lower Pliocene? and Miocene?)-Basaltic and Andesitic Ejecta
Trb	Volcanic	Ridge-Capping Basalt and Basaltic Andesite (Pliocene and Upper Miocene)
Trh	Volcanic	Rhyolitie and Dacite (Pliocene? and Miocene)
Ts	Sedimentary And Volcanic	Tuffaceous Sedimentary Rocks and Tuff (Pliocene and Miocene)
Tvm	Sedimentary And Volcanic	Mafic and Intermediate Vent Rocks (Pliocene? and Miocene)
Water	Water	Water Bodies

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APPENDIX B – Key to Soils (Winema NF and Crater Lake NP)

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Appendix B – Key to Soils of the Winema National Forest

Map Symbol	Map Unit Name
1051	Alfic Humic Vitrixerands, 2 to 12 percent slopes
2031	Anniecreek, 0 to 2 percent slopes
2030	Aquic Haplocryands, 0 to 2 percent slopes
2018	ashy sandy loam, 0 to 2 percent slopes
1090	Bigtoe Shortnap complex, 0 to 2 percent slopes
1054	Bottlespring, 1 to 4 percent slopes
9315	Castlecrest ashy loamy sand, dry, 0 to 15 percent slopes
1388	Castlecrest ~~ Rocky land with minimal vegetation potential badland complex, 60 to 80 percent slopes
9312	Castlecrest Sunnotch Timbercrater complex, 0 to 10 percent slopes
9326	Castlecrest Timbercrater complex, dry, 2 to 15 percent slopes
1220	Castlecrest Timbercrater Unionpeak complex, 15 to 30 percent slopes
1227	Castlecrest Timbercrater Unionpeak complex, 2 to 15 percent slopes
2008	Chemult, 0 to 2 percent slopes
2000	Chinchallo, 0 to 2 percent slopes
2025	Chinchallo Cosbie complex, 0 to 3 percent slopes
2004	Chocknott, 1 to 4 percent slopes
1247	Collier, 2 to 15 percent slopes
1281	Collier, steep ~~ Rocky land with minimal vegetation potential badland complex, 60 to 80 percent slopes
9215	Collier very gravelly ashy loamy sand, low, 0 to 7 percent slopes
9218	Collier ashy loamy sand, dry, 0 to 10 percent slopes
1235	Collier Lapine Onionpie complex, 15 to 40 percent slopes
1207	Collier Maklak complex, 0 to 4 percent slopes
1217	Collier Maklak Onionpie complex, 2 to 8 percent slopes
2017	Cosbie, 1 to 3 percent slopes
2006	Cosbie Stirfry complex, 1 to 15 percent slopes
1004	Deepdish, 0 to 2 percent slopes
2019	Humic Haploxerands ~~ Dry meadow flood plain ~~ Intermittent streams, rivers riverwash complex, 0 to 2 percent slopes
2007	Intermittent streams, rivers rubble land, gently sloping
1000	Lapine, 0 to 2 percent slopes
1003	Lapine, 1 to 6 percent slopes
1013	Lapine, 35 to 70 percent slopes
1016	Lapine, 2 to 12 percent slopes
1018	Lapine, 12 to 35 percent slopes
9344	Lapine paragravelly ashy loamy coarse sand, 10 to 35 percent slopes
1060	Lapine, fine sand substratum, 2 to 20 percent slopes

1061	Lapine, fine sand substratum, 0 to 2 percent slopes
9328	Llaorock Timbercrater complex, dry, 30 to 60 percent slopes
9201	Maklak, 0 to 10 percent slopes
2001	Mesquito, 1 to 8 percent slopes
2002	Mesquito, 8 to 15 percent slopes
2003	Mighty, 0 to 1 percent slopes
2020	Mightytoo, 0 to 2 percent slopes
2012	Regcrust, 0 to 1 percent slopes
1052	Shukash, 12 to 35 percent slopes
1053	Shukash, 2 to 12 percent slopes
2010	Silverdollar Mighty complex, 0 to 1 percent slopes
1009	Steiger, 1 to 6 percent slopes
9336	Sunnotch, 0 to 35 percent slopes
2033	Terric Cryosaprists, loamy-skeletal, 1 to 15 percent slopes
8334	Timbercrater, 25 to 60 percent slopes
2034	Typic Cryaquands, medial-skeletal, 4 to 8 percent slopes
9266	Umak, 0 to 10 percent slopes
1214	Unionpeak, 2 to 12 percent slopes
2005	Wickiup, 0 to 2 percent slopes
2009	Yamsay, 0 percent slope
1050	Yancy, 1 to 4 percent slopes

Appendix B – Key to Soils of Crater Lake National Park

Map Unit	Description
1	Anniecreek-Stirfry-Riverwash complex, 0 to 2 percent slopes
4	Castlecrest gravelly ashy sandy loam, 2 to 10 percent slopes
5	Castlecrest ashy loamy sand, dry, 0 to 15 percent slopes
6	Castlecrest ashy loamy sand, low, 0 to 7 percent slopes
7	Castlecrest gravelly ashy loamy sand, high elevation, 5 to 45 percent slopes
8	Castlecrest-Badland complex, 60 to 100 percent slopes
9	Castlecrest-Llaorock complex, 2 to 25 percent slopes
12	Cleetwood-Castlecrest complex, dry, 10 to 30 percent slopes
13	Cleetwood-Castlecrest-Llaorock complex, 5 to 30 percent slopes
14	Cleetwood, thin surface-Cleetwood-Dyarock complex, 2 to 20 percent slopes
15	Cleetwood, thin surface-Llaorock-Cleetwood complex, 5 to 30 percent slopes
16	Cleetwood-Sunnotch-Castlecrest complex, high elevation, 15 to 30 percent slopes
18	Collier ashy loamy sand, dry, 0 to 10 percent slopes
19	Collier very gravelly ashy loamy sand, low, 0 to 7 percent slopes
20	Collier-Badland complex, 60 to 100 percent slopes
23	Grousehill-Llaorock complex, 5 to 35 percent slopes
26	Lapine paragravelly ashy loamy coarse sand, 10 to 35 percent south slopes
27	Lapine paragravelly ashy loamy coarse sand, 35 to 55 percent south slopes
30	Lapine-Rock outcrop-Wuksi complex, 30 to 70 percent south slopes
31	Lapine-Steiger-Wuksi complex, high elevation, 2 to 25 percent slopes
32	Lapine-Wuksi-Rock outcrop complex, 30 to 70 percent north slopes
33	Lava flows, 0 to 15 percent slopes
34	Llaorock-Castlecrest complex, 0 to 15 percent slopes
35	Llaorock-Castlecrest complex, 15 to 30 percent slopes
36	Llaorock-Castlecrest-Rock outcrop complex, 30 to 60 percent north slopes
37	Llaorock-Castlecrest-Rock outcrop complex, 30 to 60 percent south slopes
38	Llaorock-Rubble land-Rock outcrop complex, 60 to 90 percent north slopes
39	Llaorock-Rubble land-Rock outcrop complex, 60 to 90 percent south slopes
40	Llaorock-Timbercrater-Rubble land complex, dry, 60 to 90 percent south slopes
41	Maklak paragravelly ashy loamy sand, 0 to 10 percent slopes
42	Maklak paragravelly ashy loamy sand, low, 0 to 10 percent slopes
45	Redcone-Cinder land complex, 30 to 60 percent south slopes
46	Redcone-Rock outcrop complex, 30 to 60 percent north slopes
47	Rock outcrop-Rubble land complex, 60 to 90 percent slopes
50	Sunnotch gravelly ashy sandy loam, dry, 0 to 35 percent slopes
51	Sunnotch-Unionpeak complex, 15 to 35 percent slopes

Map Unit	Description
52	Timbercrater paragravelly ashy loamy sand, dry. 25 to 60 percent north slopes
53	Timbercrater-Castlecrest complex, 0 to 10 percent slopes
54	Timbercrater-Castlecrest complex, dry, 2 to 15 percent slopes
55	Timbercrater-Castlecrest complex, dry, 15 to 30 percent south slopes
56	Timbercrater-Castlecrest-Llaorock complex, 10 to 30 percent south slopes
57	Timbercrater-Llaorock complex, 10 to 30 percent north slopes
58	Timbercrater-Llaorock complex, dry, 30 to 60 percent south slopes
59	Timbercrater-Llaorock complex, high elevation, 30 to 80 percent slopes
60	Timbercrater-Llaorock-Castlecrest complex, 30 to 60 percent slopes
61	Timbercrater-Sunnotch-Castlecrest complex, 0 to 10 percent slopes
63	Umak paragravelly ashy fine sandy loam, dry, 0 to 10 percent slopes
64	Umak paragravelly ashy fine sandy loam, low, 0 to 5 percent slopes
65	Unionpeak-Castlecrest complex, dry, 5 to 15 percent slopes
66	Unionpeak-Castlecrest-Llaorock complex, 15 to 30 percent slopes
67	Unionpeak-Castlecrest-Sunnotch complex, 0 to 15 percent slopes
68	Water

APPENDIX C – ODFW Benchmarks

From *Appendix IX-A* of the *Oregon Watershed Assessment Manual* (WPN 1999)

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ODFW HABITAT BENCHMARKS

	UNDESIRABLE	DESIRABLE
POOLS		
Pool Area (% total stream area)	<10	>35
Pool Frequency (channel widths between pools)	>20	5-8
Residual Pool Depth		
Small Streams (<7-m width)	<0.2	>0.5
Medium Streams (≥7-m & <15-m width)		
Low Gradient (slope <3%)	<0.3	>0.6
High Gradient (slope >3%)	<0.5	>1.0
Large Streams (≥15-m width)	<0.8	>1.5
Complex Pools (pools w/wood complexity >3 km)	<1.0	>2.5
RIFFLES		
Width/Depth Ratio (active-channel based)		
East Side	>30	<10
West Side	>30	<15
Gravel (% area)	<15	≥35
Silt-Sand-Organics (% area)		
Volcanic Parent Material	>15	<8
Sedimentary Parent Material	>20	<10
Channel Gradient <1.5%	>25	<12
SHADE (reach average %)		
Stream Width <12 m		
West Side	<60	>70
Northeast	<50	>60
Central-Southwest	<40	>50
Stream Width >12 m		
West Side	<50	>60
Northeast	<40	>50
Central-Southeast	<30	>40
LARGE WOODY DEBRIS* (15 cm X 3 m min. size)		
Pieces/100-m Stream Length	<10	>20
Volume/100-m Stream Length	<20	>30
"Key" Pieces (>60-cm and 10-m long)/100 m	<1	>3
RIPARIAN CONIFERS (30 m from both sides)		
Number >20-in dbh/1,000-ft Stream Length	<150	>300
Number >35-in dbh/1,000-ft Stream Length	<75	>200

* Values for streams in forested basins