Summary Table: Characteristics of Ecoregions of Western Washington and Oregon

1. COAST RANGE

Level IV Ecoregion	Area (square miles)	Physiography	Elevation / Local Relief (feet)	Geology: Surficial material and bedrock	Soil: Order (Great Groups)	Soil: Common Soil Series	Soil: Temperature / Moisture Regimes	Climate: Precipitation Mean annual (inches)	Climate: Frost Free Mean annual (days)	Climate: Mean Temperature January min/max; July min/max, (˚F)	Potential Natural Vegetation	Land Use and Land Cover
1a. Coastal Lowlands	986	Marine estuaries, terraces, sand dunes, and spits with low gradient, black water, meandering streams and rivers and shallow coastal lakes. Channelization and diking common.	0-300 / 10-180	Quaternary marine and non-marine terrace deposits, beach and dune sands, alluvium.	Spodosols (Haplorthods), Entisols (Fluvaquents), Inceptisols (Tropaquepts), Andisols (Fulvudands, Melanudands)	Bullards, Netarts, Coquille, Clatsop, Nestucca, Brenner, Lint, Quillamook. Very deep to deep, silty clay loam to sandy loam.	Isomesic/ Udic	60-85	200-240	36/50; 52/68	Sitka spruce, western hemlock, western red cedar, estuarine wetland plants.	Douglas-fir/western hemlock/Sitka spruce forests, wetlands. Dairy farms, urban/rural residential development, recreation, pastureland.
1b. Coastal Uplands	2608	Coastal headlands and upland terraces with medium to high gradient, black-water streams.	0-500 / 100-1000	Quaternary glacial drift and marine sandstone.	Inceptisols (Haplumbrepts, Humitropepts), Andisols (Fulvudands)	Ozette, Lytell, Astoria, Templeton, Reedsport, Ecola, Tolovana. Mostly deep, silt loam.	Isomesic/ Udic	70-125	190-240	36/48; 52/68	Sitka spruce, western hemlock, western red cedar.	Douglas-fir/western hemlock/Sitka spruce/ western red cedar forests. Forestry, rural residential development, recreation.
1c. Low Olympics	1685	Low mountains with U-shaped valleys and high gradient streams. Higher areas were glaciated.	0-4000 / 800-2800	Lower Tertiary sandstone and siltstone.	Andisols (Fulvudands)	Snahopish, Solleks, Makah. Gravelly loam and very gravelly loam.	Mesic, Frigid/ Udic	80-200	180-230	30/45; 48/72	Western hemlock, western red cedar; some Douglas-fir. At higher elevations, Pacific silver fir. Most epiphytic-rich rainforest ecosystem in Ecoregion 1.	Western hemlock/western red cedar/Douglas-fir/Pacific silver fir/red alder/ bigleaf maple forests. Forestry, recreation, some rural residential development.
1d. Volcanics	3585	Steeply sloping mountains. High gradient, cascading streams and rivers occur and have stable summer flow.	0-5701 / 700-4000	Tertiary basaltic flows, pillow lavas, tuffaceous basalt, breccia, porphyritic basalt, basaltic sandstone/siltstone/conglomerate, concretionary marine siltstone, tuffaceous mudstone/siltstone/sandstone.	Andisols (Fulvudands, Hapludands), Ultisols (Palehumults)	Bunker, Knappton, Olympic, Raught, Hemcross, Klistan, Harslow, Caterl, Laderly, Murtip. Very deep to moderately deep, gravelly silt loam, silty clay loam, silt loam, loam, gravelly loam, very gravelly loam.	Frigid, Mesic/ Udic	70-200	100-190	30/46; 50/76	Western hemlock, western red cedar, Douglas-fir.	Douglas-fir/western hemlock/red alder/western red cedar forests. Forestry, rural residential development, recreation.
1e. Outwash	354	Undulating terraces and plateaus. Medium gradient, streams and rivers occur and have lower summer flow than elsewhere in Ecoregion 1.	20-1000 / 100-800	Pleistocene glacial outwash deposits.	Andisols (Fulvudands)	Hoquiam, Le Bar. Deep, silt loam.	Mesic/ Udic	80-120	180-240	34/46; 50/75	Western hemlock, western red cedar; some Douglas-fir, red alder, bigleaf maple.	Douglas-fir/western hemlock/red alder/bigleaf maple/western red cedar forests. Hay farming, pasture, forestry, rural residential development.
1f. Willapa Hills	2028	Low, rolling hills and mountains with medium gradient, sinuous streams and rivers. Low drainage density.	0-3020 / 300-1400	Miocene sandstone, siltstone, shale.	Andisols (Fulvudands, Hapludands), Alfisols (Hapludalfs), Inceptisols (Haplumbrepts, Dystrochrepts, Eutrochrepts, Fragiumbrepts)	Zenker, Elochoman, Vernonia, Scaponia, Goble, Braun, Anunde, Rinearson, Alstony. Mostly very deep to moderately deep, silt loam; some gravelly loam.	Mesic/ Udic	50-100	100-210	31/46; 50/76	Western hemlock, western red cedar, Douglas-fir.	Douglas-fir/western hemlock/red alder/western red cedar forests. Forestry, some rural residential development, pastureland.
1g. Mid-Coastal Sedimentary	3739	Moderately sloping, dissected mountains with medium to high gradient, sinuous streams.	300-2000 / 100-1500	Eocene marine sandstone, siltstone, mudstone, conglomerate.	Inceptisols (Dystrochrepts, Eutrochrepts, Haplumbrepts), Ultisols (Palehumults, Haplohumults)	Preacher, Bohannon, Digger, Blachly, Honeygrove, McDuff. Very deep to moderately deep, clay loam to gravelly loam.	Mesic/ Udic	60-130	110-200	32/48; 48/78	Western hemlock, western red cedar, Douglas-fir.	Douglas-fir/western hemlock/red alder/western red cedar forests. Forestry, pastureland in valleys, some rural residential development.
1h. Southern Oregon Coastal Mountains	693	Dissected mountains with high gradient, sinuous streams and rivers. This ecoregion is part of the Siskiyou Mountains.	0-3400 / 800-1800	Cretaceous and Jurassic siltstone, shale, sandstone, conglomerate, graywacke, granite, diorite, serpentine.	Inceptisols (Dystrochrepts, Eutrochrepts, Haplumbrepts)	Etelka, Whobrey, Remote, Digger, Umpcoos, Rinearson. Very deep to shallow, silt loam to very gravelly sandy loam.	Mesic, Frigid/ Xeric	70-140	170-220	36/52; 52/76	Tanoak, Douglas-fir, western hemlock, Port Orford cedar.	Douglas-fir/western hemlock/tanoak/Port Orford cedar forests. Forestry, recreation, pasture-land in valleys, rural residential development.
1i. Redwood Zone	31	Dissected coastal mountains and foothills with medium gradient, sinuous streams.	0-2000 / 1000-1800	Jurassic graywacke.	Inceptisols (Humitropepts), Ultisols (Haplohumults)	Bosland, Floras, Loeb. Deep to moderately deep, well drained, silty clay loam to silt loam.	Isomesic/ Udic	80-95	190-280	38/50; 50/74	Coast redwood, Douglas-fir.	Douglas-fir/coast redwood forests. Forestry, recreation, rural residential development.

2. PUGET LOWLAND

Level IV Ecoregion	Area (square miles)	Physiography	Elevation / Local Relief (feet)	Geology: Surficial material and bedrock	Soil: Order (Great Groups)	Soil: Common Soil Series	Soil: Temperature / Moisture Regimes	Climate: Precipitation Mean annual (inches)	Climate: Frost Free Mean annual (days)	Climate: Mean Temperature January min/max; July min/max, (˚F)	Potential Natural Vegetation	Land Use and Land Cover
2a. Fraser Lowland	344	Undulating glacial drift plains, terraces, and floodplains with low gradient, meandering streams and rivers.	0-400 / 50-300	Holocene alluvium; Pleistocene glacial drift.	Spodosols (Haplorthods), Alfisols (Umbraqualfs)	Lynden, Hale, Tromp, Whatcom, Labounty. Silty to sandy loam.	Mesic/ Udic	33-55	150-210	33/44; 50/73	Western hemlock, western red cedar; some red alder, bigleaf maple, black cottonwood, Douglas-fir.	Pastureland, dairy farms, hay farming, urban/rural residential development. Some riparian deciduous forests.
2b. Eastern Puget Riverine Lowlands	677	Floodplains and terraces with meandering rivers, oxbow lakes, and meander scars. Freshwater and estuarine wetlands occur but were more common in the past.	0-800 / 100-600	Fine, Holocene fluvial sediments.	Entisols (Fluvaquents), Inceptisols (Xerochrepts)	Skagit, Sumas, Sultan. Deep, fertile, silt loam.	Mesic/ Xeric	32-40	160-220	34/44; 52/75	Western red cedar, western hemlock; some red alder, black cottonwood, bigleaf maple, Sitka spruce.	Cropland and pastureland (often on reclaimed wetland), rural residential/suburban/urban/ industrial activity. Some riparian deciduous woodland, coniferous forests, wetlands.
2c. San Juan Islands	218	Glacial scoured islands with small intermittent streams and limited surface water.	0-2400 / 150-2000	Mesozoic and Paleozoic sedimentary rock.	Spodosols (Haplorthods), Alfisols (Palexeralfs), Inceptisols (Xerochrepts), Andisols (Melanoxerands, Vitraquands)	Roche, San Juan, Pickett, Bow, Coveland. Very gravelly silt loam to gravelly loam.	Mesic/ Xeric	20-35	160-226	36/46; 52/62	Douglas-fir, grand fir; some oak woodlands, grasslands, red cedar.	Coniferous forests, some oak woodlands. Crop and pastureland, recreation, rural residential development, towns.
2d. Olympic Rainshadow	758	Rolling glacial till plains with small, low to medium gradient streams. Drainage patterns are often deranged or internal. Fresh water supplies are limited in the east.	0-1800 / 300-1000	Pleistocene Vashon glacial ground moraine deposits.	Inceptisols (Durochrepts, Xerochrepts), Spodosols (Haplorthods)	Whidbey, Hoypus (on Whidbey Island), Elwha, Clallam, Catla. Moderately deep, gravelly sandy loam to very gravelly loamy sand.	Mesic/ Xeric	10-40	160-230	36/45; 51/64	Western hemlock, western red cedar, Douglas-fir; some grasslands, grand fir.	Pasture and cropland, woodland dominated by Douglas-fir. Forestry, rural residential development.
2e. Eastern Puget Uplands	1142	Rolling moraines and foothills with lakes and sinuous streams and rivers.	0-2677 / 500-2000	Pleistocene Vashon glacial moraine deposits; Tertiary sedimentary rock.	Inceptisols (Durochrepts, Xerochrepts), Andisols (Vitrixerands)	Tokul, Alderwood, Everett. Very gravelly sandy loam to gravelly loam.	Mesic/ Xeric, Udic	35-65	145-200	32/43; 50/72	Western hemlock, western red cedar; some Douglas-fir.	Douglas-fir and western hemlock forests. Forestry, pastureland and cropland, rural residential/suburban/urban development.
2f. Central Puget Lowland	1698	Undulating glacial drift plains with lakes and small, sinuous streams. Coastline is irregularly shaped. It is characterized by many bays and some cliffs.	0-1000 / 200-1000	Pleistocene drift, Vashon glacial till.	Inceptisols (Durochrepts, Xerochrepts)	Alderwood, Harstine, Poulsbo, Ragnar. Deep, well drained, gravelly sandy loam; also fine sandy loam.	Mesic/ Xeric	35-70	160-210	35/44; 52/75	Western hemlock, western red cedar, Douglas-fir; some red alder, bigleaf maple.	Urban/suburban/industrial activity especially in east. Elsewhere, Douglas-fir/western hemlock forests, forestry, limited agriculture, rural residential development.
2g. Southern Puget Prairies	809	Nearly level to rolling glacial outwash and till plains with low gradient streams and lakes.	0-900 / 200-500	Pleistocene Vashon glacial outwash and till deposits.	Inceptisols (Durochrepts, Xerumbrepts), Andisols (Melanoxerands)	Alderwood, Everett, Spanaway, Nisqually. Deep, moderately well drained to somewhat excessively well drained, gravelly loam, gravelly sandy loam, very gravelly sandy loam, loamy fine sand.	Mesic/ Xeric	40-55	150-210	34/46; 52/77	Douglas-fir, prairies; some oak woodland, western hemlock, red cedar.	Douglas-fir/western hemlock forests, prairies, oak woodlands. Forestry, hay farming, pastureland. Mix of military and private land ownership.
2h. Cowlitz/Chehalis Foothills	437	Low, rolling to steeply sloping hills with medium to high gradient streams. Unaffected by continental Vashon glaciation.	300-1200 / 400-800	Pleistocene alpine glacial deposits; Tertiary sandstone and siltstone; Eocene andesite.	Ultisols (Palehumults), Alfisols (Palexeralfs)	Olympic, Melbourne, Buckpeak, Centralia. Very deep, well drained to very well drained, silty clay loam to loam.	Mesic/ Xeric	50-60	150-200	33/45; 50/76	Western hemlock, western red cedar; some Douglas-fir, bigleaf maple.	Douglas-fir and western hemlock forests. Forestry, rural residential development, hay farming, pastureland.
2i. Cowlitz/Newaukum Prairie Floodplains	357	Rolling terraces and floodplains with meandering streams and oxbow lakes. Unaffected by continental Vashon glaciation.	150-800 / 200-500	Holocene alluvial deposits; Pleistocene alpine glacial outwash material.	Ultisols (Palehumults), Alfisols (Palexeralfs, Glossaqualfs), Mollisols (Argiaquolls)	Salkum, Prather. On prairies: Lacamas. On floodplains: Reed. Very deep to deep, silty clay loam to silt loam.	Mesic/ Xeric	45-55	150-220	35/47; 52/78	Western red cedar, western hemlock; some Douglas-fir, bigleaf maple, oak woodlands, prairies.	Pastureland, cropland, rural residential development, some coniferous and deciduous forests, forestry.

3. WILLAMETTE VALLEY

Level IV Ecoregion	Area (square miles)	Physiography	Elevation / Local Relief (feet)	Geology: Surficial material and bedrock	Soil: Order (Great Groups)	Soil: Common Soil Series	Soil: Temperature / Moisture Regimes	Climate: Precipitation Mean annual (inches)	Climate: Frost Free Mean annual (days)	Climate: Mean Temperature January min/max; July min/max, (˚F)	Potential Natural Vegetation	Land Use and Land Cover
3a. Portland/ Vancouver Basin	574	Undulating terraces and floodplains with low gradient, meandering streams. Numerous wetlands, oxbow lakes and ponds.	0-300 / 20-250	Pleistocene unconsolidated and semi-consolidated, glacial/fluvial deposits in a fault block basin.	Mollisols (Haplaquolls, Argixerolls, Endoaquolls), Inceptisols (Xerochrepts, Fragiumbrepts), Alfisols (Glossudalfs, Haploxeralfs)	Sauvie, Rafton, Hillsboro, Gee, Dollar, Multnomah, Latourell, Quatama. Deep, silty clay loam to loam.	Mesic/ Xeric	37-50	165-210	34/45; 56/80	Prairies (maintained by Native American burning), Oregon white oak, Douglas-fir, Oregon ash, alder, western red cedar.	Urban/suburban/rural residential/industrial activity, pastureland, nursery crops.
3b. Willamette River and Tributaries Gallery Forest	675	Floodplains with low gradient, incised, strongly meandering rivers and associated oxbow lakes/meander scars.	40-500 / 10-80	Holocene and Pleistocene fluvial sediments.	Mollisols (Haploxerolls, Endoaquolls), Vertisols (Endoaquerts)	Cloquato, Newberg, Chehalis, Wapato, Waldo, Bashaw. Very deep to deep, fertile, silty clay loam to fine sandy loam.	Mesic/ Xeric	40-50	165-210	33/46; 50/85	Cottonwood, alder, Oregon ash, bigleaf maple, Douglas-fir.	Vegetable and fruit farming, pastureland, urban/suburban/rural residential development, forested riparian areas, flood control.
3c. Prairie Terraces	1971	Nearly level to undulating fluvial terraces with sluggish, meandering streams and rivers. Historically, seasonal wetlands and ponds were common. Many streams now channelized.	160-500 / 10-150	Pleistocene lacustrine and fluvial sedimentary deposits.	Alfisols (Albaqualfs), Mollisols (Argialbolls, Argixerolls), Inceptisols (Xerochrepts)	Woodburn, Aloha, Willamette, Dayton, Amity, Concord, Malabon, Coburg, Salem. Very deep to deep, silty clay loam to silt loam.	Mesic/ Xeric	40-50	165-210	33/46; 51/85	Oregon white oak, prairies (maintained by Native American burning). In wetter areas: Oregon ash, Douglas-fir.	Grass seed, grain farming (often on reclaimed wetland). Also urban/rural residential development and some forested riparian zones.
3d. Valley Foothills	2527	Rolling foothills with medium gradient, sinuous streams.	10-1500 / 400-1000	Miocene andesitic basalt and marine sandstone.	Alfisols (Haploxeralfs), Ultisols (Haplohumults, Palehumults), Mollisols (Haploxerolls), Inceptisols (Fragiumbrepts)	Bellpine, Jory, Nekia, Hazelair, Willakenzie, Laurelwood, Cascade. Moderately deep to very deep, silty clay loam to silt loam.	Mesic/ Xeric	40-60	165-210	32/46; 50/80	On drier sites: Oregon white oak and madrone. In moister areas: Douglas-fir more common. Some western red cedar.	Rural residential development, pastureland, coniferous and deciduous forests, forestry, vineyards, Christmas tree farms, orchards.

4. CASCADES

Level IV Ecoregion	Area (square miles)	Physiography	Elevation / Local Relief (feet)	Geology: Surficial material and bedrock	Soil: Order (Great Groups)	Soil: Common Soil Series	Soil: Temperature / Moisture Regimes	Climate: Precipitation Mean annual (inches)	Climate: Frost Free Mean annual (days)	Climate: Mean Temperature January min/max; July min/max, (˚F)	Potential Natural Vegetation	Land Use and Land Cover
4a. Western Cascades Lowlands and Valleys	6302	Westerly trending ridges and valleys with reservoirs and medium gradient rivers and streams. U-shaped, glaciated valleys in the east.	800-4000 / 400-3000	Oligocene-Eocene andesitic, basaltic, and rhyolitic lava flows and breccia.	Inceptisols (Haplumbrepts), Ultisols (Haplohumults, Palehumults), Andisols (Haploxerands)	Klickitat, Kinney, McCully, Peavine, Honeygrove, Orford, Olympic, Cinebar. Very deep to deep, clay loam, silty clay loam, silt loam, gravelly clay loam, gravelly silt loam, cobbly loam.	Mesic/ Udic	60-90	120-180	31/41; 47/78	Western hemlock, western red cedar, Douglas-fir.	Douglas-fir/western hemlock/western red cedar/vine maple/red alder forests are widespread. Forestry and recreation are important land uses and pastureland occurs in lower valleys.
4b. Western Cascades Montane Highlands	4557	Steep, glaciated, dissected mountains and ridges with high to medium gradient streams and glacial rock-basin lakes.	2800-5900 / 2000-3100	Oligocene-Miocene andesitic and basaltic lava flows and breccia.	Inceptisols (Haplumbrepts), Andisols (Hapludands, Fulvicryands, Haplocryands)	Keel, Hummington, Aschoff, Bull Run, Illahee, Mellowmoon. Very deep to moderately deep, silt loam, gravelly silt loam, gravelly loam, cobbly loam.	Frigid, Cryic/ Udic	70-120	80-120	26/37; 44/75	Pacific silver fir, western hemlock, mountain hemlock, Douglas-fir; some noble fir. Ecoregion 4b is higher in elevation than Ecoregion 4a and is snow influenced.	Extensive Pacific silver fir/western hemlock/ Douglas-fir/mountain hemlock/noble fir/subalpine fir/grand fir/white fir forests. Common land uses include forestry and recreation. Ecoregion 4b is an important regional water source.
4c. Cascade Crest Montane Forest	2219	High, undulating, volcanic plateau punctuated by buttes and cones. Sinuous, medium gradient streams flow through the glaciated landscape. Numerous glacial rock basin lakes. Small lakes on collapsed lava flows. Wetland areas are found in southwestern Washington Cascades.	4000-6500 / 500-2500	Pleistocene-Pliocene basaltic and andesitic lava flows, breccia, pyroclastic deposits; some Pleistocene alpine glacial deposits.	Spodosols (Haplocryods, Humicryods), Andisols (Fulvicryands), Inceptisols (Cryandepts)	Lastance, Talapus, Thader, Mt. Hood, Dinzer, Vanson, Sinnice, Tradedollar. Very gravelly silt loam, stony fine sandy loam, sandy loam, very cobbly loam.	Cryic/ Udic	55-100	30-90	21/35; 43/72	Mountain hemlock, Pacific silver fir; some grand fir, noble fir.	Forests composed of mountain hemlock, Pacific silver fir, Englemann spruce, and lodgepole pine are extensive. Land uses include back-country recreation and some forestry. Ecoregion 4c is an important regional water source.
4d. Cascades Subalpine/Alpine	719	High, glaciated, volcanic peaks with cascading streams, glacial cirques, and tarns. Active snowfields and glaciers more common to the north. Active and dormant volcanoes.	5600-14410 / 1600-8000	Pleistocene basalt and andesite; some alpine glacial deposits.	Entisols (Cryorthents)	Bare rock, rubble.	Cryic/ Udic, Peradic	75-140	0-30	16/31; 38/65	Herbaceous and shrubby subalpine meadow vegetation; scattered mountain hemlock, subalpine fir stands.	Bare rock, glaciers, subalpine meadows, and forests. Land uses include back-country recreation. Ecoregion 4d is an important regional water source.
4e. High Southern Cascades Montane Forest	916	High, undulating plateau punctuated by volcanic peaks and affected by alpine glaciation. Many glacial rock-basin lakes occur. Its intermittent and permanent streams have medium to high gradients.	4000-8208 / 700-2500	Pleistocene alpine glacial deposits; Pliocene and Miocene andesite and olivine basalt.	Andisols (Vitricryands), Mollisols (Cryoborolls), Inceptisols (Cryochrepts), Spodosols (Haplocryods)	Woodcock, Oatman, Otwin, Lapine, Winopee, Steiger. Very deep to deep, very gravelly and stony loam to gravelly loamy coarse sand.	Cryic/ Udic	45-70	70-100	23/37; 44/74	Mountain hemlock, lodgepole pine, Pacific silver fir; some grand fir, white fir, Shasta red fir.	Mostly coniferous forest with some bare rock at higher elevations. Land uses include back-country recreation and some forestry and grazing.
4f. Umpqua Cascades	1594	Highly dissected mountains with a few small lakes and high to medium gradient streams and rivers.	1000-5300 / 1200-2800	Tertiary pyroclastic rocks, basalt and basaltic andesite lava flows, breccia, tuff, sandstone, siltstone.	Ultisols (Palehumults), Inceptisols (Haplumbrepts)	Orford, Honeygrove, Gustin, Klickitat, Harrington, Kinney, Illahee, Scaredman, Mellowmoon. Very deep to moderately deep, clay loam, gravelly clay loam, gravelly silt loam, very gravelly loam, extremely gravelly loam, cobbly loam.	Mesic, Frigid/ Udic	50-80	80-180	32/42; 49/82	Grand fir, white fir, western hemlock, Pacific silver fir, Douglas-fir; some Shasta red fir, mountain hemlock.	Douglas-fir/white fir/western hemlock/ Pacific silver fir/Shasta red fir/mountain hemlock forests. Land uses include forestry and recreation. Ecoregion 4f is an important regional water source.
4g. Southern Cascades	1049	Mountains with moderate slopes, broad valleys, and medium to high gradient streams and rivers. Reservoirs, a few large mountain plateau lakes of glacial origin, and a high number of intermittent streams.	2600-5800 / 400-2400	Pliocene basalt and basaltic andesite.	Alfisols (Haploxeralfs), Inceptisols (Xerochrepts, Xerumbrepts), Ultisols (Palexerults), Mollisols (Argixerolls)	Freezener, Geppert, Straight, Farva, Pinehurst, Dumont, Coyata. Moderately deep to deep, loam, gravelly loam, very cobbly loam.	Mesic, Frigid/ Xeric	45-60	90-120	26/45; 47/85	White fir, Douglas-fir, ponderosa pine; some Shasta red fir, mountain hemlock.	Extensive rather open conifer forests with white fir often common. Douglas-fir and ponderosa pine are prevalent at low elevations and Shasta red fir grows at high elevations. Land uses include forestry, recreation, and some grazing. Ecoregion 4g is an important regional water source.

9. EASTERN CASCADES SLOPES AND FOOTHILLS

Level IV Ecoregion	Area (square miles)	Physiography	Elevation / Local Relief (feet)	Geology: Surficial material and bedrock	Soil: Order (Great Groups)	Soil: Common Soil Series	Soil: Temperature / Moisture Regimes	Climate: Precipitation Mean annual (inches)	Climate: Frost Free Mean annual (days)	Climate: Mean Temperature January min/max; July min/max, (˚F)	Potential Natural Vegetation	Land Use and Land Cover
9a. Yakima Plateau and Slopes	1793	High, unglaciated plateaus, buttes, and canyons with medium to high gradient, permanent and intermittent streams and rivers. Springs occur especially in the south.	2500-5000 / 400-2000	Pleistocene and Miocene basalt flows.	Alfisols (Haploxeralfs), Inceptisols (Xerochrepts), Mollisols (Haploxerolls, Argixerolls)	Satus, Jumpe, Sutkin, Sapkin. Stony to very stony loam.	Frigid/Xeric; Mesic at lower elevations	16-35	90-130	18/35; 52/82	Ponderosa pine, bitterbrush, Oregon white oak, Douglas-fir.	Open ponderosa pine and bitterbrush; some Douglas-fir and Oregon white oak. Forestry, recreation, and grazing. Mainly Yakima Nation land.
9b. Grand Fir Mixed Forest	974	High, glaciated plateaus and mountains with high gradient, permanent streams and rivers. Scattered glacial rock-basin lakes.	2200-6500 / 600-2000	Pleistocene and Miocene andesite and basalt flows.	Andisols (Vitrixerands, Vitricryands), Inceptisols (Xerumbrepts), Mollisols (Haploxeralfs), Spodosols (Cryorthods)	Yallani, Bins, Bindle, Ketchly, Nomlas, Twolakes, Stirrup. Loam, sandy loam, gravelly sandy loam, gravelly loam, stony loam.	Frigid/Xeric; Udic at higher elevations	35-55	50-90	16/32; 47/77	Grand fir, Douglas-fir.	Grand fir/Douglas-fir forests; some ponderosa pine. Forestry, recreation and a regional water source. Mostly publicly owned; some Yakima Nation land.
9c. Oak/Conifer Eastern Cascades Columbia Foothills	1024	Foothills, low mountains, plateaus, and valleys with permanent and intermittent, mostly medium gradient, streams and rivers.	500-3500 / 400-2000	Pleistocene basalt; Miocene Columbia River basalt.	Alfisols (Haploxeralfs), Mollisols (Haploxerolls), Inceptisols (Xerochrepts)	Underwood, McGowan, Gunn, Wamic, Hesslan, Skyline. Mostly very deep to moderately deep, loam, stony loam, very cobbly loam.	Mesic/ Xeric	16-40	90-140	26/40; 53/82	Douglas-fir, ponderosa pine, Oregon white oak, grasslands.	In the east: oak woodlands and ponderosa pine. In the west: Douglas-fir and western hemlock. Some grasslands also occur. Common land uses include forestry, recreation, grazing, rural residential development, orchards, and, in the valleys, grain and hay farming. Mostly privately owned land.
9d. Ponderosa Pine/Bitterbrush Woodland	1077	High, undulating plateaus and canyons with permanent, medium gradient streams. Stream flow consistent year around due to volcanic-influenced hydrogeology.	2800-5200 / 250-1800	Mt. Mazama ash; Pleistocene and Pliocene olivine basalt, olivine bearing andesite.	Andisols (Vitrixerands)	Sisters, Wanoga, Fremkle, Allingham, Circle. Well drained, loamy sand to gravelly sandy loam that is often derived from ash.	Frigid/ Xeric	16-35	50-90	20/40; 40/82	Ponderosa pine, bitterbrush.	Mainly ponderosa pine and bitterbrush. Common land uses include forestry, grazing, and recreation. Most of the land is owned by the public or the Warm Springs Nation.
9e. Pumice Plateau Forest	4224	High, undulating volcanic plateau with isolated buttes and permanent and intermittent, low to medium gradient streams. Spring fed creeks, marshes, and a few lakes.	4500-8295 / 200-1800	Mt. Mazama ash and pumice; Pleistocene basalt and andesite; Miocene olivine basalt.	Andisols (Vitricryands)	Shanahan, Lapine, Steiger, Maset, Yawhee. Very deep to moderately deep, well drained to excessively drained, coarse sandy loam to gravelly loamy coarse sand that is often derived from pumice.	Cryic/ Xeric	16-30	10-50	14/37; 38/80	On flats and depressions where pumice deposits are thickest: lodgepole pine. On slopes: ponderosa pine.	Lodgepole pine and ponderosa pine forests. Forestry and grazing. Most of the land is owned by the public.
9f. Cold Wet Pumice Plateau Basins	641	High elevation basins with forested wetlands, marshes, lakes, reservoirs. Medium to low gradient rivers are important habitat for migratory waterfowl. Extensive marsh areas in the south. High ground water tables in the La Pine Basin.	4500-5000 / 20-500	Thick Mt. Mazama ash deposits, semi-consolidated lacustrine and fluvial sediments of Pleistocene age.	Andisols (Cryaquands, Vitricryands), Mollisols (Cryaquolls)	Tutni, Sunriver, Wickiup. Mucky silt loam, loamy sands, sandy loam.	Cryic/ Aquic	20-25	10-50	12/38; 38/80	La Pine Basin: lodgepole pine and wet, forested wetlands. Sycan and Klamath marshes: wetland vegetation.	Wetland meadow vegetation (e.g. tules, tufted hairgrass), lodgepole pine stands, and forested wetlands (e.g. willow and lodgepole pine). Grazing, rural residential, wood cutting, duck hunting, and recreation. A mix of publicly and privately owned land.
9g. Klamath/Goose Lake Warm Wet Basins	1040	Floodplains, terraces, and pluvial lake basins with low-gradient streams. Historically abundant wetlands. Many have been drained for agriculture.	4000-4900 / 30-300	Unconsolidated and semi-consolidated lacustrine and fluvial sediments of Holocene and Pleistocene age.	Histosols (Borohemists), Aridisols (Haplodurids), Inceptisols (Humaquepts), Mollisols (Haploxerolls, Endoaquolls, Argixerolls, Durixerolls), Andisols (Cryaquands)	Lather, Henley, Tulana, Kirk, Lakeview, Ozamis, Drews, Deter, Salisbury. Often very deep to deep, peaty muck, clay loam, silt loam,	Mesic/ Xeric	10-18	90-120	21/39; 51/85	Big sagebrush, bunchgrass, wetland plants (tules, cattails, sedges).	Sagebrush, bunchgrass, some wetlands. Cropland, pastureland, and rural residential development. Mainly privately owned land.
9h. Fremont Pine/Fir Forest	1665	Steeply to moderately sloping mountains and high plateaus with mostly high gradient, intermittent streams. Also, reservoirs, a few glacial rock-basin lakes, numerous springs.	5000-8000 / 800-2000	Miocene basalt, rhyolite, tuffaceous lava flows, sandstone, siltstone.	Mollisols (Argixerolls, Haploxerolls), Andisols (Vitrixerands)	Winterim, Royst, Mound, Woodchopper, Rogger, Polander. Very deep to moderately deep, sandy loam to stony loam.	Cryic, Frigid/ Xeric	15-40	30-70	15/38; 42/85	At lower elevations: ponderosa pine, white fir. At higher elevations: whitebark pine.	Ponderosa pine/white fir forests occur; some lodgepole pine, juniper, whitebark pine. Elevation, slope angle, and slope aspect affect vegetation types. Common land uses include forestry, grazing, and recreation. Mainly publicly owned land.
9i. Southern Cascades Slope	516	Gentle to moderate sloping mountains with permanent and intermittent, medium to high gradient streams. A few permanent and intermittent lakes with associated wetlands. Springs in the west.	3600-6300 / 500-2700	Miocene basaltic andesite.	Mollisols (Cryoborolls, Argixerolls)	Woodcock, Pokegema, Pinehurst, Greystoke. Deep, loam to stony loam.	Cryic, Frigid/ Xeric	25-40	30-70	20/34; 47/82	Ponderosa pine. At higher elevations: white fir.	Ponderosa pine forests occur; white fir, Shasta red fir, and Douglas-fir grow at higher elevations. Common land uses include forestry, grazing, and recreation. Mainly publicly owned land.
9j. Klamath Juniper/ Ponderosa Pine Woodland	785	Undulating hills, benches, and escarpments with intermittent and permanent, medium gradient streams. A few small plateau lakes occur but reservoirs are more common.	4400-6200 / 250-1800	Miocene olivine basalt, tuffaceous sandstone, siltstone.	Mollisols (Argixerolls, Haploxerolls)	Lorella, Nuss, Merlin, Royst, Winterim. Stony clay loam, loam, very stony loam, gravelly loam, very gravelly loam.	Mesic, Frigid/ Xeric	12-20	60-120	21/40; 49/83	In south: juniper. In north: a mix of ponderosa pine and juniper. Also bunchgrass and both low and big sagebrush.	Mosaic of pastures and woodland; some forestry and recreational activity. Its reservoirs are important to lowland irrigation. A mix of publicly and privately owned land.

77. NORTH CASCADES

Level IV Ecoregion	Area (square miles)	Physiography	Elevation / Local Relief (feet)	Geology: Surficial material and bedrock	Soil: Order (Great Groups)	Soil: Common Soil Series	Soil: Temperature / Moisture Regimes	Climate: Precipitation Mean annual (inches)	Climate: Frost Free Mean annual (days)	Climate: Mean Temperature January min/max; July min/max, (˚F)	Potential Natural Vegetation	Land Use and Land Cover
77a. North Cascades Lowland Forests	1998	Low mountains and broad, glaciated valleys with permanent, medium gradient, glacial-fed rivers and streams. Reservoirs and glacial lakes.	400-3400 / 1200-3000	Mesozoic and Paleozoic conglomerates, slate, graywacke.	Andisols (Haplocryands), Spodosols (Humicryods, Duricryods)	Getchell, Kindy, Potchub. Deep to moderately deep, silt loam, gravelly silt loam.	Mesic, Frigid/ Udic	60-90	120-200	30/43; 49/76	Western hemlock, western red cedar, Douglas-fir.	Mainly western hemlock/Douglas-fir/western red cedar forests. Forestry is the dominant land use; rural residential development, recreation, and valley grazing also occurs. A mix of publicly and privately owned land.
77b. North Cascades Highland Forests	3140	Steep, glaciated ridges; with permanent, cascading glacial streams and glacial rock-basin lakes. Some rock outcroppings.	2800-6400 / 2600-3600	In west: Paleozoic sandstone and slate. In east: Tertiary and pre-Cretaceous schist.	Spodosols (Duricryods, Haplocryods), Histosols (Cryofolists)	Reggad, Altapeak, Chinkmin. Very deep to moderately deep, sandy loam, gravelly sandy loam, very cobbly muck.	Frigid, Cryic/ Udic	60-120	80-120	25/42; 47/71	Pacific silver fir, mountain hemlock, western hemlock; some subalpine fir.	Extensive forests composed primarily of Pacific silver fir and mountain hemlock. Common land uses include forestry and recreation. Most of the land is in public ownership.
77c. North Cascades Subalpine/ Alpine	1671	High mountain peaks with bare rock, glaciers, cirques. Permanent, high gradient, sediment-laden, glacial meltwater streams and glacial rock-basin lakes.	5500-10775 / 1500-2200	Recent volcanics; Tertiary and pre-Cretaceous gneiss and schist; Mesozoic granitic rocks and marine sedimentary rocks.	Spodosols (Haplocryods), Inceptisols (Cryumbrepts), Andisols (Vitricryands)	Undifferentiated, bare rock and rubble.	Cryic/ Udic	80-140	40-70	13/36; 42/62	Herbaceous and shrub alpine meadow vegetation; some mountain hemlock, subalpine fir, subalpine larch.	Alpine meadows, bare rock, glaciers, snowfields, some subalpine forests. Wilderness recreation is a common land use. Most of the land is publicly owned and is a regional water source.
77d. Pasayten/ Sawtooth Highlands	1165	High, glaciated ridges, plateaus, and U-shaped valleys with numerous wetlands. Small glacial rock-basin lakes and both permanent and intermittent, high gradient streams.	4000-7882 / 1800-3600	Tertiary and pre-Cretaceous metamorphic rocks; Mesozoic marine sandstone, shale, granitic rock.	Inceptisols (Cryochrepts, Cryumbrepts)	Myerscreek, Devore, Crocamp. Fine sandy loam to very stony sandy loam.	Cryic/ Xeric	25-65	50-90	8/27; 45/70	Mixed subalpine fir with subalpine spruce, lodgepole pine in the northeast. At lower elevations: some Douglas-fir. At higher elevations: whitebark pine, subalpine fir.	Forests, forestry, wilderness recreation, grazing, and some mining. The land is mainly publicly owned and serves as a regional water source.
77e. Okanogan Pine/Fir Hills	1171	Rounded mountains, ridges, and U-shaped valleys with medium to high gradient, permanent and intermittent streams and rivers. Some alpine glacial rock-basin lakes and irrigation storage reservoirs.	2500-5500 / 1400-3000	Mesozoic marine sandstone, shale, granitic rocks; pre-Cretaceous gneiss and schist.	Inceptisols (Xerochrepts), Alfisols (Haploxeralfs)	Watony, Siegel. Very deep to deep, very stony coarse sandy loam, gravelly loam.	Frigid, Cryic/ Xeric	10-35	80-110	12/30; 50/80	Ponderosa pine and Douglas-fir. At high elevations: some subalpine fir. Common understory in the north: Idaho fescue. Common understory in the south: bluebunch wheatgrass.	Mostly woodland. Common land uses include forestry, recreation, grazing, rural residential development. A mix of publicly and privately owned land.
77f. Chelan Tephra Hills	435	Steep, glaciated mountains and ridges with medium to high gradient rivers and streams. A few glacial rock-basin lakes.	1200-6094 / 2000-4000	Thick deposits of volcanic ejecta (tephra); Miocene basalt; Cretaceous mixed metamorphic and igneous rocks; Precambrian gneiss and schist.	Andisols (Vitrixerands), Inceptisols (Xerochrepts), Alfisols (Haploxeralfs)	Bonner, Eloika, Roslyn, Martella, Natkim, Choralmont, Palmich, Ramparter. Very deep to deep, often tephra-dominated, silt loam, gravelly silt loam, sandy loam, cindery sandy loam, gravelly sandy loam. Fine ashy surface.	Mesic, Frigid/ Xeric	16-35	80-110	18/30; 48/78	Mainly ponderosa pine and Douglas-fir; some grand fir and subalpine fir on higher ridge crests.	Forest. Common land uses include recreation, forestry, and grazing. Most of the land is publicly owned.
77g. Wenatchee/ Chelan Highlands	742	Steep, glaciated, mountains, ridges, and U-shaped valleys with mostly high gradient streams and rivers. A few glacial rock-basin lakes.	1100-6500 / 2400-5400	Pre-Tertiary and Cretaceous gneiss and schist; Mesozoic granitic rocks and serpentine.	Andisols (Vitricryands), Spodosols (Haplocryods)	Totem, Wedge, Esmeralda. Sandy loam, cindery sandy loam, bouldery sandy loam. Often ashy.	Frigid, Cryic/ Xeric	25-55	75-105	16/32; 48/76	Douglas fir, grand fir, subalpine fir, pine grass; some lodgepole pine, ponderosa pine, Englemann spruce.	Coniferous forest with wilderness recreation activity occurring. The land is mostly publicly owned and is a regional water source.
77h. Chiwaukum Hills and Lowlands	795	Low mountains, hills, cuestas, and V-shaped valleys with a trellis drainage pattern. The permanent and intermittent streams have steep gradients and high sediment loads. Glacial basins often contain lakes and were formed by alpine glaciation. South of the continental glacial limit.	2000-5200 / 400-3200	Paleocene to Cretaceous arkose with interbedded conglomerate, sandstone, siltstone.	Inceptisols (Xerochrepts), Alfisols (Haploxeralfs), Spodosols (Cryohumods)	Index, Nard, Ardenmont. Loam to loamy sand. Tends to be shallow in the south and deeper in the north.	Mesic, Frigid/ Xeric	15-40	75-120	18/34; 50/81	Ponderosa pine, Douglas-fir, grand fir, bitterbrush, pinegrass, some subalpine fir.	Mostly coniferous woodland with forestry, recreation, grazing, some rural residential development. A mix of publicly and privately owned land.
77i. High Olympics	596	Steep, glaciated mountains with cirques, alpine glaciers, persistent snow pack, bare rock, cascading glacier-fed streams, and glacial rock-basin lakes.	3000-7965 / 2400-3800	Lower Tertiary sandstone and siltstone.	Spodosols (Cryorthods), Entisols (Cryorthents)	Undifferentiated soils, bare rock, rubble.	Frigid, Cryic/ Udic, Xeric	70-250	80-120	34/24; 44/68	Mountain hemlock, Pacific silver fir, subalpine meadows. On the xeric soils of rainshadow areas in the northeast: subalpine fir.	Subalpine coniferous forests and meadows with bare rock, glaciers, snowfields, and wilderness recreational activity occurring. It is a regional water source.

78. KLAMATH MOUNTAINS

Level IV Ecoregion	Area (square miles)	Physiography	Elevation / Local Relief (feet)	Geology: Surficial material and bedrock	Soil: Order (Great Groups)	Soil: Common Soil Series	Soil: Temperature / Moisture Regimes	Climate: Precipitation Mean annual (inches)	Climate: Frost Free Mean annual (days)	Climate: Mean Temperature January min/max; July min/max, (˚F)	Potential Natural Vegetation	Land Use and Land Cover
78a. Rogue/Illinois Valleys	285	Terraces and floodplains in mountain valleys. Streams and rivers are perennial.	1100-1800 / 100-600	Holocene fluvial terrace and floodplain deposits.	Mollisols (Haploxerolls, Argixerolls), Alfisols (Palexeralfs), Inceptisols (Xerochrepts, Endoaquepts)	On floodplains: Newberg, Camas, Evans. On valley terraces: Medford, Foehlin, Central Point. On fans: Ruch, Barron, Clawson. Deep to very deep, silty clay loam to gravelly loam.	Mesic/ Xeric	20-60	120-180	31/47; 51/89	Oregon white oak, madrone, California black oak, ponderosa pine, grasslands.	A mix of orchards, cropland, pastureland, oak woodland, pine woodland, towns, rural residential development.
78b. Siskiyou Foothills	818	Moderately sloping mountain foothills with reservoirs and perennial and intermittent streams and rivers.	1500-4000 / 600-2000	In the east: Eocene basaltic lava flows. In the west: Jurassic sandstone and shale.	Mollisols (Haploxerolls, Argixerolls), Inceptisols (Xerochrepts), Vertisols (Haploxererts)	Medco, McMullin, McNull, Brader, Debenger, Carney. Mostly moderately deep, clay, cobbly clay loam, loam, gravelly loam.	Mesic/ Xeric	25-45	110-160	28/45; 50/87	Ponderosa pine, Douglas-fir, Oregon white oak, California black oak, madrone.	Drier areas east of Medford: dominated by oak woodlands and ponderosa pine. Wetter areas: Douglas-fir and incense cedar. A mix of grazing, rural residential development, orchards, some cropland, and some forestry.
78c. Umpqua Interior Foothills	921	Narrow interior valleys, terraces, and foothills.	450-2000 / 400-1550	Holocene fluvial terrace deposits; Pliocene marine sandstone; Eocene basalt.	Mollisols (Haploxerolls, Argixerolls, Argiaquolls), Alfisols (Haploxeralfs), Inceptisols (Xerochrepts)	On terraces: Conser, Newberg, Roseburg. On foothills: Oakland, Sutherlin, Nonpareil. Mostly moderately deep to very deep, silty clay loam to loam.	Mesic/ Xeric	30-50	120-180	34/49; 53/84	Oregon white oak, Douglas-fir, ponderosa pine, madrone.	A mix of oak woodlands and coniferous forests intermingle with pastureland, vineyards, orchards, row crops, rural residential development, and towns.
78d. Serpentine Siskiyous	441	Highly dissected mountains with permanent and intermittent, high gradient streams.	1500-4200 / 1000-2200	Jurassic ultramafic rocks.	Alfisols (Haploxeralfs), Inceptisols (Xerochrepts)	Pearsoll, Dubakella, Eightlar, Perdin, Gravecreek. Stony clay loam to cobbly loam.	Mesic, Frigid/ Xeric, Udic	45-140	70-140	32/44; 49/82	Jeffrey pine, tanoak, Douglas-fir. Unique understory species and sparse woodland vegetation caused by soils derived from underlying serpentine.	Sparse woodland with unique understory vegetation. Common land uses include back country recreation, forestry, and mining. Ecoregion 78d is a regional water source.
78e. Inland Siskiyous	2610	Highly dissected mountains with permanent and intermittent streams. A few small lakes at higher elevations.	1000-6000 / 1000-2800	Jurassic granitic rocks, shale, sandstone.	Alfisols (Haploxeralfs), Inceptisols (Xerochrepts), Ultisols (Haploxerults)	Vannoy, Caris, Offenbacher, Josephine, Beekman, Kanid, Siskiyou, Tethrick. Deep to moderately deep, silt loam to gravelly loam.	Mesic, Frigid/ Xeric	35-70	90-160	29/44; 50/86	Douglas-fir, ponderosa pine, Oregon white oak, incense cedar, grand fir.	Coniferous forests. Forestry, recreation, rural residential development, and mining. Ecoregion 78e is a regional water source.
78f. Coastal Siskiyous	853	Highly dissected mountains with perennial and intermittent, high gradient streams and a few small, alpine glacial lakes.	1000-4800 / 1000-2700	Cretaceous and Jurassic conglomerate, sandstone, siltstone.	Inceptisols (Xerochrepts, Dystrochrepts), Ultisols (Palehumults, Palexerults)	Fritsland, Bravo, Cassiday, Deadline, Barkshanty, Nailkeg, Jayar, Althouse, Skymor, Atring, Kanid, Acker. Mostly moderately deep to very deep, very gravelly silt loam to very gravelly loam. On benches and ridge tops: moderately deep, silty clay loams.	Mesic, Frigid/ Udic, Xeric	70-130	100-190	38/50; 50/76	Tanoak, Douglas-fir; some Port Orford cedar and Jeffrey pine.	Forests composed primarily of tanoak and Douglas-fir are common. Land uses include forestry, recreation, rural residential development and some mining.
78g. Klamath River Ridges	122	Highly dissected mountains with perennial and intermittent, high gradient streams.	3800-7000 / 1000-3000	Miocene and Oligocene basaltic and andesitic flows; Jurassic granitic rocks.	Mollisols (Argixerolls, Haploxerolls)	Skookum, McMullin, McNull. Loam to very cobbly loam.	Mesic/ Xeric	25-35	90-160	24/42; 49/88	Higher elevations and north-facing slopes: Douglas-fir, white fir, Shasta red fir. Lower elevations and south-facing slopes: ponderosa pine, western juniper, chaparral.	Coniferous forest, woodlands, savanna, and chaparral. Common land uses include forestry and recreation.

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