Summary Table: Characteristics of the Ecoregions of Utah

13. CENTRAL BASIN AND RANGE

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
13a. Salt Deserts	6655	Unglaciated. Mostly barren, nearly level playas, salt flats, mud flats, low terraces, and saline lakes once drowned by ancient Lake Bonneville. A few, small scattered mountains occur. Almost no lakes have an outlet and water levels fluctuate seasonally and annually. Playas and salt flats are ponded during wet intervals and eroded by wind when dry.	Mostly 4200-4650/ 0-50; commonly nearly level	Mostly very alkaline, Quaternary mud and salt flat deposits; also Quaternary eolian material, lacustrine sediments, and alluvium. Isolated exposures of much older rock occur.	Mostly Aridisols (Aquisalids, Haplocalcids); also Alfisols (Natrustalfs)	Mostly Saltair; also Jordan, Lakeshore, Bramwell. Soils are mostly clayey, light-colored, strongly affected by salt and alkali, poorly- or very poorly-drained, and often salt-crusted.	Mesic/ Aridic	Mostly 4-8; some eastern sites receive up to about 12 inches	110-190	12/40; 50/94	Desert/ Vegetation is mostly absent; scattered, extremely salt-tolerant plants occur such as salicornia, saltgrass, alkali sacaton, iodine bush, and/or greasewood.	Mostly barren; some recreational, military, and industrial activity. Tailing ponds, dikes, salt processing plants, smelters, and refuse facilities are found locally. Very limited grazing potential. Largely unsuitable as cropland.
13b. Shadscale-Dominated Saline Basins	8110	Unglaciated. Arid nearly flat to gently sloping valley bottoms, lake terraces, fan skirts, and lower hillslopes. Scattered dunes and ephemeral streams occur. The area is internally-drained.	4300-5600/ 25-600	Quaternary lacustrine sediments, alluvium, colluvium, basalt, and eolian deposits.	Aridisols (Natrargids, Haplocalcids), Entisols (Torriorthents)	Skumpah, Tooele, Uffens, Goshute, Dera, Uvada, Hiko Springs, Drum, Biddleman, Timpie. Light-colored soils with high salt and alkali content are common and are dry for extended periods.	Mesic/ Aridic	4-9	100-190	12-44; 48/94. January maximums are highest in the south	Mostly saltbush-greasewood/ Shadscale, winterfat, greasewood, bud sagebrush, bottlebrush squirreltail, and/or Indian ricegrass. In the south: galleta.	Primarily rangeland and wildlife habitat. Large livestock and poultry farms raise hogs and chickens. Cropland is usually uncommon due to lack of water and salty soils; however, near Delta, alfalfa, barley, corn silage, pasture, and sugar beets are grown under irrigation.
13c. Sagebrush Basins and Slopes	9394	Unglaciated. Semiarid basin rims, lake terraces, valleys, alluvial fans, bajadas, mountain flanks, and stream terraces. Ephemeral streams occur. The ecoregion is internally-drained.	4400-7400/ 100-2600	Mostly Quaternary alluvium, Quaternary colluvium, and Tertiary valley-fill deposits; also some Quaternary lacustrine sediments, Tertiary volcanics, and Paleozoic sedimentary rocks.	Aridisols (Haplocalcids, Calciargids, Natrargids), Entisols (Torriorthents)	Hiko Peak, Garbo, Amtoft, Sevy, Taylorsflat, Biblesprings, Ashdown. Soils are light colored, often coarse-textured, and are dry for extended periods.	Mesic/ Aridic often bordering on Xeric	8-12	80-170	10/44; 46/94. January maximums are highest in the south	Great Basin sagebrush/ Wyoming big sagebrush; perennial bunchgrasses and herbaceous plants become progressively more common northward as available moisture increases.	Rangeland, wildlife habitat, and localized irrigated agriculture. In Sevier Valley, irrigated alfalfa, feed lots, and dairy operations. Grazing and fire have reduced native grasses and promoted cheatgrass.
13d. Woodland- and Shrub-Covered Low Mountains	5498	Unglaciated. Low, rocky fault-block mountains, ridges, mountain slopes, hills, foothills, alluvial fans, and valley-fill terraces. Ephemeral streams occur.	5000-9000/ 200-3400	Quaternary colluvium and basalt. Tertiary sedimentary rocks, Tertiary volcanic rocks, Paleozoic sedimentary rocks, and Cambrian quartzite.	Entisols (Torriorthents), Mollisols (Calcixerolls, Argixerolls, Durixerolls, Haploxerolls)	Eaglepass, Lodar, Logring, Kyler, Ubehebe, Nevu, Uana, Segura, Cropper, Itca	Mesic-Frigid/ Xeric sometimes bordering on Aridic	10-22	40-120	10/48; 46/96. January maximums are highest in the south	Juniper-pinyon woodland/ Juniper and pinyon woodland and, at higher elevations, mountain brush (including mountain mahogany, cliffrose, and western serviceberry). Sagebrush (including black sagebrush and big sagebrush) codominates.	Rangeland, woodland, wildlife habitat, and logging. Large areas have been cleared in an effort to increase livestock forage. Grazing has depleted the woodland understory of grasses, which has reduced fire frequency and allowed sagebrush to invade.
13e. High Elevation Carbonate Mountains	116	Partially glaciated. High, rugged, rocky, north-south trending, fault-block mountains with steep slopes. Some areas, especially in the Deep Creek Range, have been extensively glaciated and moraines occur. Some perennial streams occur, but only limited amounts of surficial water are available on limestone and dolomite.	8000-12100/ 1000-4100	Quaternary glacial drift, alluvium, and colluvium. Mostly Paleozoic limestone, dolomite, and quartzite; also Precambrian metasediments and Tertiary granite, rhyolite, andesite, and basalt. Exposed bedrock occurs.	Mollisols (Palecryolls, Haplocryolls, Haploxerolls)	Flygare, Podmor	Frigid/ Mostly Xeric; also Cryic/ Xeric, Udic	25-40+	50-90	8/32; 44/80	Western spruce-fir forest/ Douglas-fir, aspen, subalpine fir, limber pine, Engelmann spruce, white fir, mountain big sagebrush, and associated grasses. Trees are most common on north-facing slopes. Carbonates extend the elevational limits of trees.	Summer rangeland, wildlife habitat, recreation, water supply, and limited logging.
13f. Moist Wasatch Front Footslopes	890	Unglaciated. Footslopes, alluvial fans, stream terraces, lake terraces, lake plains, deltas, and floodplains near the Wasatch Front and the Great Salt Lake. Many mountain-fed perennial streams occur in shrub- and tree-covered canyons. They provide water to municipalities and to agriculture.	4200-5400/ 10-500	Mostly Quaternary alluvium, colluvium, or lake sediments.	Mollisols (Haploxerolls, Argixerolls, Calcixerolls, Calciaquolls, Haplustolls), Entisols (Torrifluvents, Torriorthents), Alfisols (Natrustalfs)	Kidman, Bingham, Kilburn, Fielding, Layton, Wasatch, Chipman, Pleasant Vale, Salt Lake, Kirkham, Sunset, Lasil, Genola, Linoyer, Medburn	Mesic/ Xeric	10-22	145-220; climate is affected by the Great Salt Lake	16/42; 53/93	Great Basin sagebrush, saltbush-greasewood/ Big sagebrush, bluebunch wheatgrass, western wheatgrass, sand dropseed, gumweed, Indian ricegrass, rabbit brush, needleandthread, and/or winterfat. Shrub- and tree-covered canyons descend into the ecoregion from the neighboring mountains.	Widespread urban, suburban, industrial, and commercial activity. Elsewhere, irrigated cropland, irrigated pastures, livestock farms, and orchards. Alfalfa, wheat, barley, vegetables, corn, sugar beets, peaches, pears, apples, apricots, and cherries are grown.
13g. Wetlands	360	Unglaciated. Nearly flat to depressional terrain containing brackish, very saline, and fresh water wetlands. Water levels are often managed.	4200-4650/ 0-25	Quaternary lacustrine sediments and alluvium.	Aridisols (Aquisalids), Mollisols (Calciaquolls)	Mostly Saltair; also Refuge, Salt Lake. Soils are poorly-drained or very poorly-drained and are often salty.	Mesic/ Aquic	6-17	140-170 near the Great Salt Lake; as short as 115 days elsewhere	Mostly 14/38; mostly 56/94. Minimums are lower in western Juab County	Tule marshes/ Baltic rushes, cattails, burreed, common reed grass, sedges, and/or bullrushes.	Wildlife habitat, several state and federal wildlife refuges, and rangeland. Large concentrations of birds occur.
13i. Malad and Cache Valleys	662	Unglaciated. Lake terraces, benches, stream terraces, valley bottoms, alluvial fans, hills, and foothills. Mountain-fed streams occur and provide water to municipalities and to agriculture.	Mostly 4200-5400; maximum 6000/ Mostly 10-200; sometimes to 1000	Mostly Quaternary alluvium, Pleistocene lake sediments, or Quaternary colluvium. Also Tertiary sedimentary rock.	Mollisols (Haploxerolls, Argixerolls, Calcixerolls, Calciaquolls, Natrixerolls, Calciustolls, Argiustolls)	In Cache Valley: Logan, Trenton, Parleys, Salt Lake, Greenson, Nibley, Collett, Kidman, Ricks, Lewiston. In Malad Valley: Kearns, Hupp, Parleys, Sterling, Honeyville, Greenson, Fridlo. Upper terraces and benches are better drained and freer from soluble salts than lower areas.	Mesic/ Xeric	12-24. Average annual snowfall is 60 to 80 inches	100-165	8/35; 50/92	Sagebrush steppe/ On better drained sites: bluebunch wheatgrass, western wheatgrass, bluegrass, Great Basin wildrye, cheatgrass, and big sagebrush. On wet floodplains: reeds, sedges, foxtail, saltgrass, and wiregrass. On poorly-drained low lake terraces: saltgrass and greasewood.	Irrigated cropland and pastures, dryland farming, livestock farms, dairying, and orchards. Alfalfa, barley, wheat, vegetables, silage corn, sugar beets, apples, and peaches are grown. Urban, suburban, commercial, and industrial activity occur.

14. MOJAVE BASIN AND RANGE

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
14a. Creosote Bush-Dominated Basins	516	Unglaciated. Arid low relief area composed of alluvial fans, flood plains, stream terraces, valleys, and scattered mesas and buttes.	2200-4000/ 100-800	Quaternary alluvium, eolian sediments, and basalt. Jurassic and Triassic sedimentary rock and Permian Limestone. Rock outcrops occur.	Entisols (Torrifluvents, Torripsamments), Aridisols (Petrocalcids, Haplocalcids)	Tobler, Harrisburg, Pintura Cave, Junction, Toquerville, St. George, Winkel	Thermic/ Aridic	6-10	180-225+	24/54; 60-100	Creosote bush/ Creosote bush, big sagebrush, Joshua tree, blackbrush, galleta, Indian ricegrass, and cheatgrass. Along the Virgin River: willows, sedges, cattails, and wiregrass.	Irrigated farming, pasture, rangeland, and wildlife habitat. Alfalfa, small grain, milo, sorghum, and sugar beet seed are grown. Rapidly growing suburban developments near Saint George.
14b. Arid Footslopes	128	Unglaciated. Arid footslopes, alluvial fans, hills, basalt flows, mesas, and highly dissected, erodible, sparsely vegetated badlands. Badlands yield large amounts of sediment during thunderstorms.	3000-5000/ 1000-2000	Quaternary alluvium, basalt, colluvium, and eolian deposits. Mesozoic and Permian sedimentary rock including limestone. Rock outcrops are common.	Aridisols (Petrocalcids)	Curhollow, Pastura, Veyo, Winkel. Indurated carbonate hardpans occur.	Mesic/ Aridic	10-12	155-180	20-48/ 68-100	Saltbush-greasewood/ Wyoming big sagebrush, blackbrush, Mormon tea, yellowbrush, galleta, Indian ricegrass, cheatgrass, and cholla.	Wildlife habitat, recreation, and rangeland.
14c. Mountain Woodland and Shrubland	103	Unglaciated. Mountains, mountain slopes, and mesa tops. Ephemeral streams occur.	4000-7800/ 200-2700	Quaternary colluvium. Paleozoic quartzite, limestone, and calcareous sandstone and shale. Precambrian schist with granitic intrusions. Rock outcrops are common.	Entisols (Ustorthents), Mollisols (Haplustolls, Argiustolls)	Welring, Tortugas, Motoqua, Kolob, Paunsaugunt	Frigid, Mesic/ Aridic, Xeric	12-16	120-170	16-44/ 60-96	Juniper-pinyon woodland/ Pinyon, juniper, serviceberry, Gambel oak, cliffrose, manzanita, native bluegrass, black sagebrush, squirreltail, and cheatgrass.	Rangeland, recreation, and wildlife habitat.

18. WYOMING BASIN

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
18a. Rolling Sagebrush Steppe	245	Unglaciated. Semiarid rolling plains, hills, cuestas, mesas, and terraces. Footslopes, ridges, alluvial fans, and outwash fans also occur near mountains.	5350-9400/ Mostly 100-1600; 2000 maximum	Quaternary alluvium, colluvium, outwash deposits, and eolian deposits overlie Tertiary and Cretaceous sedimentary rock or partly metamorphosed Precambrian sedimentary rock of the Uinta Mountain Group. Rock outcrops occur.	Aridisols (Haplocalcids, Calciargids, Haplargids), Entisols (Torriorthents)	Luhon, Grieves, Fluetsch, Clapper, Mivida, Brownsto, Dahlquist, Yarts	Frigid-Mesic/ Aridic bordering on Ustic	10-16. Proximity to mts. and altitude increases precipi-tation	50-100	8/36; 48-84. Cold winters and mild summers	Sagebrush steppe/ Mostly big sagebrush and grasses; also some shadscale, fourwing saltbush, galleta, winterfat, cactus, black sagebrush, and bud sagebrush. On rock outcrops: juniper woodland. Frequent fires help maintain sagebrush.	Mostly rangeland, wildlife habitat, and irrigated agriculture growing alfalfa and small grains.
18c. Wet Valleys	173	Unglaciated. Cold high elevation valleys containing nearly flat floodplains and low terraces. Bottomlands are characterized by many wetlands.	Mostly 6000-6600/ 10-200	Mostly Quaternary alluvium; also Quaternary loess, colluvium, and glacial outwash. West of Flaming Gorge, Tertiary and Cretaceous sedimentary rock occurs.	Mostly Mollisols (Calciaquolls, Calciustolls, Calcixerolls), Entisols (Ustifluvents, Torrifluvents, Torriorthents); also Aridisols (Haplargids, Haplocalcids)	Bear Lake, Saleratus, Dahlquist, Rich, Wader, Bereniceton, Cowco, Bockston, Brownsto. Some soils are rich in organic matter. Others are affected by salt and alkali.	Frigid/ Ustic, Aquic, Aridic bordering on Ustic	9-12	55-90	0/28; 44/80	Sagebrush steppe/ Tufted hairgrass, sedges, Baltic rushes, cattails, alkali sacaton, saltgrass, alkali bluegrass, basin wildrye, bluebunch wheatgrass, needleandthread, and/or big sagebrush.	Irrigated hayland, pasture, rangeland, and wildlife habitat.
18d. Semiarid Bear Hills	651	Unglaciated. Semiarid footslopes, alluvial fans, hills, ridges, and valleys located in the rainshadow of high mountains.	6350-7700/ 50-1200	Quaternary alluvium, colluvium, and loess. Mostly Tertiary sandstone and conglomerate; also some shale, siltstone, and limestone. Rock outcrops occur.	Aridisols (Haplocalcids, Haplocambids), Entisols (Torriorthents), Mollisols (Haploxerolls, Argixerolls), Inceptisols (Calcixerepts)	Pancheri, Kearl, Cutoff, Solak, Woodpass, Alhark, Richville, Thatcher, Jebo, Falula	Frigid/ Xeric, Aridic bordering on Xeric	10-16	90-120	8/28; 44/84	Sagebrush steppe/ Big sagebrush, bitterbrush, Indian ricegrass, bluebunch wheatgrass, and/or needleandthread. On rock outcrops: juniper woodlands. Vegetation is denser on north-facing slopes than on south-facing slopes.	Mostly rangeland, wildlife habitat, and irrigated pasture; also some nonirrigated and irrigated agriculture growing alfalfa, and small grains. Oil production occurs.

19. WASATCH AND UINTA MOUNTAINS

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
19a. Alpine Zone	519	Extensively glaciated. Very high, often severely exposed ridges, mountains, and peaks above timberline. Dominated by glacial features including horns, aretes, moraines, U-shaped valleys, cirques, and many tarns. Wet meadows are common. Alpine areas are especially extensive in the Uinta Mountains.	About 11000-13528/ 50-2500	Quaternary colluvium, glacial till deposits, alluvium, and rubble. Tertiary sedimentary and igneous rocks, Mesozoic sedimentary and igneous rocks, and Precambrian quartzite. Many bedrock exposures occur.	Inceptisols (Dystrocryepts, Cryaquepts)	Mirror, Vasquez, Haverly. Acidic, very gravelly to stony, shallow soils are common. Meadows have much deeper soils than mountain slopes and are often wet.	Cryic/ Udic	30-50+. Average annual snowfall exceeds 300 inches	Less than 40	Long, cold winters	Barren and alpine meadows/ Low shrubs, mosses, cushion plants, wildflowers, alpine grasses, sedges, and willows that are adapted to acidic soils, cold winters, short summers, and/or wet soils.	Wildlife habitat, pastureland, and recreation. Snow cover is a major source of summer water for lower, more arid ecoregions.
19b. Uinta Subalpine Forests	722	Extensively glaciated. Wet, ice-sculpted, high elevation, forested mountainous ecoregion in the Uinta Mountains containing glaciated basins, mountain slopes, low-relief till plains, moraines, numerous tarns and many good quality, perennial streams in deep canyons.	About 10000-11000; deep canyons are lower/ 100-1000	Quaternary glacial till, colluvium, and alluvium. Tertiary sedimentary and igneous rocks, Mesozoic sedimentary and igneous rocks, and Precambrian quartzite. Rock outcrops occur.	Inceptisols (Dystrocryepts, Eutrocryepts), Alfisols (Glossocryalfs)	Uinta, Mirror Lake, Duchesne, Marsell, Scout	Cryic/ Udic	30+. Mean annual snowfall exceeds 150 inches	Less than 40	Long, cold winters	Mostly western spruce-fir forest/ Engelmann spruce, lodgepole pine, and subalpine fir with an understory of huckleberry and sedge; also, locally, some aspen. At timberline: stunted, subalpine fir, Engelmann spruce, and limber pine.	Logging, seasonal range, recreation, wildlife habitat, and water supply.
19c. Mid-elevation Uinta Mountains	1486	Glaciated. Middle elevation forested mountainous ecoregion in the Uinta Mountains containing moraines and a few lakes. Many good quality, perennial streams in deep canyons are found on its southern flank.	8000-10000/ 400-2000	Quaternary glacial till, colluvium, and alluvium. Mostly Tertiary sedimentary rocks, Mesozoic sedimentary rocks, and Precambrian quartzite; also some Tertiary igneous rocks.	Alfisols (Glossocryalfs, Haplocryalfs), Inceptisols (Dystrocryepts, Eutrocryepts), Mollisols (Argixerolls, Haplocryolls, Argicryolls, Palecryolls)	Uinta, Mirror Lake, Duchesne, Skutum, Marsell, Namon, Scout, Lucky Star, Manila, Henefer, Yeates Hollow, Sessions	Frigid, Cryic/ Udic, Xeric	20-30. Average annual snowfall exceeds 70 inches	40-90	Long, cold winters	Douglas-fir forest/ Douglas-fir, ponderosa pine, and aspen parkland with a sagebrush and forb understory. In higher and drier areas: mountain brush. In riparian areas: willow, cottonwood, and Engelmann spruce. In northern Uinta Mountains: lodgepole pine.	Logging, seasonal range, recreation, wildlife habitat, and water supply.
19d. Wasatch Montane Zone	3560	Partially glaciated. Middle elevation forested mountain slopes, mountain tops, ridges, and plateaus in the Wasatch Range. Moraines and lakes occur. East of the Wasatch divide, the terrain is more rolling, less steep, and less rugged than on the western side. Many good quality, perennial streams occur.	Mostly 8000-10000; lower on north-facing slopes/ 400-2000	Quaternary glacial till, colluvium, and alluvium. Sedimentary and metamorphic rocks are common and range from Cenozoic to Proterozoic in age. Rock outcrops occur.	Mollisols (Argicryolls, Palecryolls, Haplocryolls), Alfisols (Palecryalfs, Haplocryalfs, Glossocryalfs)	Lucky Star, Cluff, Senchert, Bickmore, Poleline, Fitzgerald, Roundy, Daybell, Skylick, Mortenson, Broad Canyon, Skutum, Clayburn, Faim, Embargo, Condie, Elwood, Croydon	Cryic/ Udic	16-50+. East side is drier than west side. Deep winter snow pack	Less than 40-80	Long, cold winters	Mostly Douglas-fir forest; in south: spruce-fir-Douglas-fir forest/ Aspen parkland with scattered Douglas-fir and an understory of big sagebrush, snowberry, elderberry, and mountain grasses. On cirques and north-facing slopes: subalpine fir and Engelmann spruce. Near streams: willows and birch.	Logging, seasonal range, recreation, wildlife habitat, and water supply. Grazing is more common to the east of the divide than to the west.
19e. High Plateaus	3015	Partially glaciated. Largely forested high plateaus and mountains. Includes the Aquarius, Awapa, Markagunt, Paunsaugunt, Sevier, and Wasatch plateaus.	Mostly 8000-about 11000; locally lower than 7000/ Mostly 400-3000; locally 4000+	Quaternary colluvium, alluvium, glacial drift, and basalt. Flat-lying, Tertiary igneous rock is common; also some Tertiary sedimentary rocks and Cretaceous sedimentary rocks. Rock outcrops occur.	Mollisols (Argicryolls, Haplocryolls, Palecryolls, Calcicryolls), Alfisols (Glossocryalfs), Inceptisols (Eutrocryepts)	Forsey, Faim, Sessions, Behanin, Elwood, Condie, Scout, Nielsen, Tatiyee, Jemez, Parkay, Seth, Pahreah. Many soils are derived from volcanic rock.	Cryic/ Udic	16-40+. Deep winter snow pack	Less than 40-80	Long, cold winters	Arizona pine forest, spruce-fir-Douglas-fir forest, western spruce-fir forest/ Mostly Douglas-fir, Engelmann spruce, subalpine fir, white fir, and limber pine. At low elevations: ponderosa pine. On south-facing slopes in the southern high plateaus: aspen. In the Henry Mountains: mountain brush and, on north-facing slopes, spruce-fir forest.	Wildlife habitat, rangeland, and logging. Seasonal heavy grazing on high meadows. Logging occurs outside of protected areas. In the Henry Mountains, grazing is the dominant land use and timber harvesting is very limited. Snowpack on the high plateaus provides irrigation and drinking water to the lower valleys during the late-spring and summer seasons.

19. WASATCH AND UINTA MOUNTAINS (continued)

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
19f. Semiarid Foothills	6158	Partially glaciated. Semiarid lower mountain slopes, foothills, ridgetops, and alluvial fans. Some perennial streams occur and typically originate in higher ecoregions.	Mostly 5000-8000; locally higher/ 100-2000; locally to 3000	Quaternary colluvium, alluvium, and glacial drift. Tertiary volcanics, Precambrian metamorphic rocks, and Cenozoic, Mesozoic, and Paleozoic sedimentary rocks. Bedrock outcrops are common.	Mollisols (mostly Argixerolls; also Argiustolls, Calcixerolls, Haploxerolls, Palexerolls, Paleustolls)	Agassiz, Yeates Hollow, Broadhead, Charcol, Lizzant, Pernty, Dacore, Golsum, Ridd, Ant Flat, St. Marys, Vicking, Deer Creek, Fontreen, Ocambee, Waltershow, Ipson, Durst, Harol, Sanpitch, Gappmayer. Soils are generally colluvial, rocky, or cobbly.	Mesic, Frigid/ Xeric	12-16	60-100	Long, cold winters	Mostly mountain mahogany-oak scrub; also juniper-pinyon woodland/ Gambel oak, maples, juniper, sagebrush, pinyon, serviceberry, mountain mahogany, snowberry, and associated grasses. Maple-oak scrub is dominant in the north but is gradually replaced by pinyon-juniper woodland towards the south. In the south: ponderosa pine grows at highest elevations.	Wildlife habitat, livestock grazing, recreation, and water supply. Some intensively used rangeland areas have been cleared of trees and reseeded to exotic grasses. Oil production occurs in the Overthrust Belt near Pineview in Summit County.
19g. Mountain Valleys	1351	Unglaciated. Largely unforested valleys that separate the high plateaus. Alluvial fans, low terraces, flood plains, and a few hills occur. Includes the Heber, Kamas, Loa, and Panguitch valleys.	4800-8000/ Usually 25-600; 1400 maximum. Valley floors often nearly flat	Mostly Quaternary alluvium and colluvium; also Quaternary lacustrine sediments. Tertiary igneous and sedimentary rock.	Mollisols (Argixerolls, Haploxerolls, Calciustolls, Argiustolls, Calcixerolls), Entisols (Torriorthents, Torrifluvents, Fluvaquents), Aridisols (Haplocalcids)	Genola, Notter, Ant Flat, Tebbs, Tridell, Birdow, Sanpete, Arapien, Codley, Yeates Hollow, Bruman, Descot, Manila, Krueger, Vicking, Alldown, Utaba, Dacore, Villy, Stoda	Mesic-Frigid/ Aridic, Xeric, Aquic	5-24	70-100	4/42; 45/90	Mostly Great Basin sagebrush; also some Juniper-Pinyon woodland/ Grasses, sagebrush common; some pinyon, and Utah juniper. In riparian areas, cottonwoods and introduced Russian olives.	Mostly irrigated cropland and pastureland; also rangeland. Native grasses, alfalfa hay, and some small grain crops are grown. They are mainly used as winter feed for livestock. Turkey farms, feedlots, and dairy operations occur locally.

20. COLORADO PLATEAUS

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
20a. Monticello Upland	346	Unglaciated. Nearly level to rolling, semiarid plain containing stream terraces, alluvial fans, low rolling hills, and ridges. Ephemeral streams occur.	6700-7200/ 25-200	Quaternary eolian deposits, alluvium, and colluvium. Cretaceous shale and sandstone.	Mollisols (Argiustolls, Haplustolls, Paleustolls, Calciustolls)	Monticello, Northdale, Ucolo, Abajo, Scorup, Hovenweep, Montvale. Deep, medium-textured soils have formed in sandy and silty eolian material.	Mesic/ Ustic	10-17	120-130	8/36; 50/88	On deep, fine-textured, eolian soil: Great Basin sagebrush. On shallow or stony soils: scattered pinyon-juniper woodland/ Wyoming big sagebrush, black sagebrush, scattered juniper, and associated grasses. At higher elevations, grass out-competes sagebrush and pinyon-juniper woodland if not stressed by fire or grazing.	Mostly dryland farming, and rangeland. Winter wheat, other small grains, and pinto beans are grown. Also some irrigated pastureland and alfalfa farming occurs. Shrublands provide important winter habitat for wildlife.
20b. Shale Deserts	3486	Unglaciated. Arid sparsely vegetated, nearly level to hilly plains and basins with actively eroding, highly dissected, rounded hills. Benches, alluvial fans, and buttes are found locally and badlands occur where shale is exposed. Water readily runs off shale during rainstorms resulting in erosion, terrain dissection, and high suspended sediment concentrations in stream flow. Salt leaching strongly affects downstream salinity levels in the Colorado River. Ephemeral streams in deeply incised arroyos occur.	4000-5000/ Mostly 25-500; maximum 1000 on scattered buttes	Quaternary colluvium, alluvium, and eolian material. Mostly Cretaceous Mancos Shale and Jurassic Morrison Formation. Rock outcrops occur.	Entisols (mostly Torriorthents; also Torrifluvents), Aridisols (mostly Haplocalcids; also Calcigypsids, Calciargids, Petrocalcids)	Chipeta, Persayo, Hanksville, Farb, Killpack, Ravola, Mack, Billings, Robroost. Soils with clay loam, silty clay loam, and clay textures have formed in material from saline marine shales. They contain soluble salt, gypsum, and selenium. Active erosion and rapid runoff contribute salt to Colorado River.	Mesic/ Aridic	5-8	120-160	6/40; 56/96	Saltbush-greasewood, galleta-three awn shrubsteppe/ Sparse cover of mat saltbush, shadscale, Nuttall saltbush, blackbrush, Wyoming big sagebrush, associated grasses, and/or annual forbs. Badland areas are almost devoid of vegetation.	Grazing dominates although stock carrying capacity is limited. On floodplains and terraces: some irrigated cropland occurs and primarily produces hay and grain for livestock. Carrying capacity for wildlife is typically low although deep gullies provide sheltered habitat. Oil and natural gas wells occur. Coal mining is an important land use.
20c. Semiarid Benchlands and Canyonlands	15103	Unglaciated. Semiarid benches, mesas, cuestas, alluvial fans, hillslopes, cliffs, arches, and canyons. A few isolated peaks of limited areal extent occur. Areas of low relief alternate with areas of high relief.	Mostly 5000-7500; locally higher/ 100-2000	Quaternary colluvium, alluvium, and eolian material. Tertiary, Cretaceous, Jurassic, Triassic, and Permian sandstone and limestone. Monoclines occur and can be surrounded by a "reef" of rimrock. Bare rock is common.	Mostly Entisols (Torriorthents); also Mollisols (Haplustolls, Argiustolls), Aridisols (Haplocalcids, Haplocambids, Calciargids)	Atchee, Towave, Strych, Rizno, Wayneco, Flynncove, Skos, Begay, Mivida, Cahona, Windwhistle. Soils with fine sandy loam and very fine sandy loam texture have formed in eolian deposits derived from sandstone. Depth of soil is influenced by topographic position and the rates of eolian deposition and erosion.	Mesic; some Frigid and Cryic on highest sites/ Ustic; also, Aridic often bordering on Ustic	Mostly 8-14; on highest sites: 20-25	Mostly 80-160; on highest sites: less than 50 days	4/44; 50/64	Juniper-pinyon woodland/ Utah juniper and pinyon on shallow or stony soils; also some black sagebrush, big sagebrush, galleta, blue grama, four-wing saltbush, and blackbrush, Mormon tea, and associated grasses. At higher elevations: sage parkland or mountain brush. Exposed rock has little or no vegetation.	Mostly woodland grazing and recreation; also some uranium mining, uranium processing, and oil production.
20d. Arid Canyonlands	5093	Unglaciated. Arid narrow chasms, cliffs, valley floors, floodplains, structural benches, mesas, and cuestas. Terrain has been deeply eroded by major rivers and their tributaries.	3200-5000/ 200-1800	Quaternary alluvium, eolian deposits, and colluvium. Jurassic, Triassic, Permian, Pennsylvanian sandstone, limestone, and shale. Bare rock (i.e. slick rock) is very common.	Entisols (Torriorthents, Torripsamments, Torrifluvents), Aridisols (Haplocalcids, Haplargids, Haplocambids, Petrocalcids)	Moenkopie, Sheppard, Nakai, Myton, Arches, Mido, Rizno, Farb, Hoskinnini, Limeridge, Thoroughfare, Pennell. On canyon slopes, colluvial soils have developed. On benches, shallow soils are found. In washes, deeper soils occur.	Mesic/ Aridic	5-8 Precipita-tion is lowest in deepest canyons	160-220+.	16/48; 60/100. Mild winters	Blackbrush, saltbush-greasewood/ Blackbrush, shadscale, Indian ricegrass, galleta, fourwing saltbush, blue grama, mat saltbush, sand dropseed, sand sagebrush, and/or bud sagebrush. Exposed rock has little or no vegetation. In deep canyons: blackbrush is common. In riparian areas: extensive stands of introduced tamarisk can occur.	Recreation, grazing, and wildlife habitat. In the salt valleys near Moab: irrigated cropland and residential development. In the southeast: oil production.
20e. Escarpments	4144	Unglaciated. High, dissected, partly wooded cliffs, escarpments, mesa tops, and breaks with a wide elevational range. Ecoregion 20e is most extensive in the Book Cliffs and Grand Staircase areas as well as along major river canyons. It includes the Pink, Straight, Vermilion, and Book cliffs.	5000-10000/ 500-3000	Quaternary alluvium and colluvium. Tertiary and Mesozoic sandstone, shale, and limestone. Rock outcrops are very common.	Entisols (Torriorthents, Ustorthents), Mollisols (Haplustolls, Argicryolls, Calcicryolls), Aridisols (Haplocalcids)	Travessilla, Gerst, Syrett, Podo, Thedalund, Cabba, Senchert, Batterson, Bookcliff, Shalako, Atchee, Ruko, Pahreah	Mesic, Frigid, Cryic/ Ustic often bordering on Aridic	8-30	40-150	8/48; 50/96	Juniper-pinyon woodland, mountain mahogany-oak scrub, Douglas-fir forest, spruce-fir-Douglas-fir forest, Arizona pine forest/ Vegetation varies according to aspect and moisture availability. Scrubland, woodland, and Douglas-fir are most common. Above about 9000 feet elevation and on some north-facing slopes: subalpine fir and Engelmann spruce.	Mostly recreation and wildlife habitat; also some limited grazing. Coal mining and gas production occurs locally. Steep slopes and unstable soils limit human development.
20f. Uinta Basin Floor	2615	Unglaciated. Arid saucer-shaped synclinal basin containing mountain-fed streams, alluvial terraces, outwash terraces, floodplains, hills, and ridges. Mesas and benches occur locally and alternate with lower, more arable land. High dissolved and suspended sediment loads are common water quality problems in its rivers.	4300-6400/ Mostly 50-800; 1200 maximum	Quaternary colluvium, alluvium, eolian deposits, and coarse outwash deposits. Tertiary sedimentary rocks including those of the Uinta Formation.	Entisols (Torriorthents, Torrifluvents, Torripsamments), Aridisols (Haplocalcids, Natrargids), Vertisols (Haplotorrerts)	Walknolls, Casmos, Atchee, Denco, Tipperary, Mivida, Fruitland, Montwel, Clapper, Green River, Motto, Turzo. Salt leaching from soils affects surficial water quality.	Mesic/ Aridic	5-8	115-140. Winter inversions create cold winter conditions	0/32; 50/92. Seasonal temperature extremes	Mostly saltbush-greasewood/ Shadscale, Indian ricegrass, galleta, Wyoming big sagebrush, fourwing saltbush, winterfat, needleandthread, and/or black sagebrush. In riparian areas: cottonwood and introduced Russian olive trees.	Rangeland, cropland, and wildlife habitat. On basin floors and benches: irrigated alfalfa hay and corn for cattle. Runoff from Uinta Mountains provides abundant water for irrigation. Major oil and gas fields occur.
20g. Northern Uinta Basin Slopes	707	Unglaciated. Southern foothills, outwash terraces, and glaciated canyons of the Uinta Mountains that are characterized by numerous, perennial, mountain-fed streams.	5500-9200/ 100-2600	Quaternary outwash deposits, colluvium, alluvium, and eolian deposits. Tertiary sedimentary rocks.	Mollisols (Calciustolls), Aridisols (Haplocalcids, Petrocalcids), Entisols (Torriorthents, Torrifluvents, Torripsamments)	Clapper, Tridell, Hillto, Tyzak, Atchee, Mespun, Ashley, Reepo	Mesic, Frigid/ Ustic, Aridic often bordering on Ustic	8-18	100-130	4/28; 50/84	Mostly juniper-pinyon woodland; also some sagebrush steppe/ Pinyon-juniper woodland, shrubs, and grasses with mountain brush at upper elevations. Canyons contain cottonwoods, willows, ponderosa pine, and shrubs.	Mostly livestock grazing, woodland, and irrigated pastureland; also, locally, some irrigated cropland. Phosphate mining and oil production occurs. Indian reservation land is extensive.
20h. Sand Deserts	1634	Unglaciated. Arid nearly level to hilly basins containing sparsely vegetated plains, terraces, and dunes. Flat-top benches are found locally, and ephemeral streams occur. Channel depth is bedrock-controlled and usually shallow.	Mostly 4000-5000; 6000 maximum/ Mostly 50-600; 1000 maximum	Quaternary eolian deposits and alluvium. Jurassic and Permian sedimentary rock. Characterized by shifting eolian material over bedrock.	Entisols (Torriorthents, Torripsamments), Aridisols (Haplocalcids)	Nakai, Sheppard, Moenkopie, Moffat, Aneth, Trachute, Sandbench, Wayneco, Mido	Mesic/ Aridic	5-8	130-180	10/48; 92/96	Mostly galleta-three awn shrubsteppe; some saltbush-greasewood, juniper-pinyon woodland, and, in the south, blackbrush/ Vegetation, where present, is desert or semi-desert grasses (including galleta, sand dropseed, indian ricegrass, and three awn), desert shrubs (including sandsage), and annual forbs.	Limited grazing; also, locally, some irrigated hay and grain is grown for cattle and sheep. Arable land is limited to alluvial soils on floodplains and terraces. Carrying capacity for wildlife is low. Oil and gas production occurs in the southeast.

21. SOUTHERN ROCKIES

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
21a. Alpine Zone	19	Glaciated. Steep slopes, ridges, and exposed, rocky peaks above timberline in the La Sal mountains.	About 11500-12720/ 400-1200	Quaternary rubble, glacial drift, and colluvium. Tertiary intrusive igneous rocks. Many rock outcrops.	Inceptisols (Dystrocryepts)	Meredith	Cryic/ Udic	32+. Deep winter snow pack	Less than 40	Less than 6/36; less than 50/76	Alpine meadows and barren/ Low shrubs, cushion plants, mosses, alpine grasses, wildflowers, and sedges.	Recreation, wildlife habitat, and native pastureland. Snow cover is a major source of water for lower, more arid ecoregions.
21b. Subalpine Forests	108	Glaciated. Heavily forested mountainous terrain in the La Sal and Abajo Mountains. Moraines and outwash fans occur.	8800-about 11500/ 400-2100	Quaternary glacial drift, colluvium, and alluvium. Mesozoic and Paleozoic sedimentary rocks and Tertiary intrusive igneous rocks.	Mollisols (Palecryolls, Haplocryolls), Inceptisols (Dystrocryepts), Alfisols (Haplocryalfs)	Flygare, Leighcan, Skylick, Broad Canyon, Namon, Toone	Cryic/ Udic	24-40	Less than 70	Less than 8/36; 52/84	Southwestern spruce-fir forest, pine-Douglas-fir forest/ Subalpine fir, Engelmann spruce, blue spruce, Douglas-fir, and aspen parkland with an understory of mountain brush. At timberline: stunted subalpine fir, Engelmann spruce, and limber pine.	Wildlife habitat, recreation, logging, mining, and summer rangeland. Grazing is limited by lingering snowpack and climatic conditions in general. Snow cover is a major source of water for lower, more arid ecoregions.
21c. Dry Forests and Shrublands	238	Partially glaciated. Low, forested mountain slopes and outwash fans. Perennial streams occur but summer flow is commonly reduced by diversions to irrigate cropland in lower ecoregions.	7500-9000/ 100-1500	Quaternary colluvium, alluvium, glacial drift, and eolian deposits. Mesozoic sedimentary rocks and Tertiary intrusive igneous rocks.	Mollisols (Haplustolls, Argiustolls)	Falcon, Herm, Toone, Flygare, Harpole, Bookcliff, Tomasaki	Frigid/ Ustic	16-25	Less than 80	10/36; 54/88	Pine-Douglas-fir forest, southwestern spruce-fir forest/ Gambel oak, and widely spaced ponderosa pine with an understory of mountain brush. Ponderosa pine becomes more common at higher elevations.	Wildlife habitat, livestock grazing, logging, mineral extraction, and recreation.

80. NORTHERN BASIN AND RANGE

Level IV Ecoregion		Physiography		Geology	Soil			Climate			Potential Natural Vegetation*/ Present Vegetation	Land Use
	Area (square miles)		Elevation/ Local Relief (feet)	Surficial material and bedrock	Order (Great Groups)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual (days)	Mean Temperature January min/max; July min/max, (°F)	*Source: Kuchler, 1964	
80a. Dissected High Lava Plains	412	Unglaciated. Alluvial fans, bajadas, gently rolling plains, hills, stream terraces, and floodplains. Ephemeral or intermittent streams occur.	5150-6600/ 100-1200	Quaternary alluvium, colluvium, and volcanic ash. Miocene and Pliocene tuffaceous sediments, mudstone, sandstone, conglomerate, and dacitic tuff.	Aridisols (Haplodurids), Mollisols (Calcixerolls, Argixerolls, Haploxerolls)	Dahar, Donnardo, Fontreen, Cottonthomas, Bullump, Raftriver, Borvant, Kapod, Tomsherry. Some of the soils have formed in volcanic ash.	Mostly Frigid; some Mesic/ Xeric and Aridic bordering on Xeric	11-16	75-140	8/37; 50/86	Mostly sagebrush steppe, juniper-pinyon woodland; also, juniper steppe woodland/ Wyoming and basin big sagebrush, bluebunch wheatgrass, western wheatgrass, Idaho fescue, basin wildrye, needleandthread, Nevada bluegrass, and Utah juniper. Some areas have been cleared and reseeded to crested wheatgrass.	Mostly rangeland and wildlife habitat. Some barley, oat, irrigated pastureland, and irrigated alfalfa farming.
80b. Semiarid Hills and Low Mountains	479	Unglaciated. Shrub-covered or wooded mountains, hills, and alluvial fans.	5800-9000/ 400-1800	Quaternary colluvium and alluvium. Mostly Precambrian metamorphic rock with granitic intrusions and Paleozoic sedimentary rock; also some Ordovician metamorphic rocks, Cambrian metamorphic rocks, Tertiary dacitic tuff, and Tertiary tuffaceous sediments. Rock outcrops occur.	Mollisols (Argixerolls, Argicryolls, Haplocryolls, Calcixerolls, Haploxerolls)	Bickmore, Broad Canyon, Parkay, Clavicon, Middle, Foxol, Sheep Creek	Cryic, Frigid, Mesic/ Xeric	14-30	60-120	8/32; 52/84	Mostly juniper-pinyon woodland; also sagebrush steppe/ Lower elevations: vegetation is transitional between woodland and sagebrush steppe and includes mountain big sagebrush, bluebunch wheatgrass, and scattered junipers. Medium elevations to about 7000 feet: juniper woodland with an understory of bluebunch wheatgrass and/or sagebrush. Above about 7000 feet: mountain brush.	Rangeland and wildlife habitat.
80c. High Elevation Forests and Shrublands	126	Unglaciated. Steep, rugged, partly forested mountains.	7000-9900/ 600-1900	Quaternary colluvium. Mostly Precambrian metamorphic and sedimentary rocks; granitic intrusions also occur. Rock exposures are common.	Mollisols (Argicryolls)	Dateman, Parkay, Nielsen	Cryic/ Udic	25-39. Wet winters	30-80	Less than 6/28; 52/76. Cold winters	Montane zone/ Douglas-fir, subalpine forest, aspen, and associated sagebrush. On rocky ridges: limber pine. On wide ridge tops: open grasslands. In upper canyons: Engelmann spruce and subalpine fir.	Rangeland, wildlife habitat, timberland, watershed, and recreation.
80h. Saltbush-Dominated Valleys	52	Unglaciated. Arid gently sloping valley floors and alluvial fans.	5200-6000/ 100-400	Quaternary alluvium.	Aridisols (Haplocalcids, Natrargids)	Declo, Mellor, Darkbull. Light-colored soils with high salt and alkali content are common and are dry for extended periods.	Mesic/ Xeric and Aridic bordering on Xeric	8-12	100-140	15/31; 53/87	Saltbush-greasewood/ Shadscale, bottlebrush squirreltail, black greasewood, and Wyoming big sagebrush. Salt- and drought-tolerant vegetation is common.	Primarily rangeland, wildlife habitat, and irrigated agriculture.
80i. Sagebrush Steppe Valleys	7	Unglaciated. Gently sloping valleys with unforested terraces, basin rims, floodplains, footslopes, alluvial fans, and bajadas.	5000-5400/ 25-200	Quaternary lacustrine deposits and alluvium.	Mollisols (Haploxerolls, Argixerolls)	Kearns, Parleys, Red Rock	Mesic/ Xeric	13-18	100-140	11/32; 50/90	Sagebrush steppe/ Bluebunch wheatgrass, Wyoming big sagebrush, cheatgrass, and Sandberg bluegrass.	Rangeland and non-irrigated wheat, non-irrigated barley, and irrigated alfalfa farming.

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