

Summary Table: Characteristics of Ecoregions of North Dakota and South Dakota

17. MIDDLE ROCKIES													
Level IV Ecoregion	Physiography	Area (sq. miles)	Geology			Soil			Climate			Potential Natural Vegetation	Land Use and Land Cover
			Elevation / Local Relief (feet)	Surficial Material and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation (Mean annual (inches))	Frost Free (Mean annual (days))	Mean Temperature (January minimum, July maximum, (°F))			
17a. Black Hills Foothills	Unglaciated. A ring of foothills surrounding the Black Hills mountains core. The Black Hills is composed of Lakota Sandstone, Dakota Highback separates the foothills from the plains. The Red Valley (Recreation) inside the Highback encircles the Black Hills dome.	900	3300-4900 / 450-1100	Mesozoic sandstone and shale. The Highback is composed of Lakota Sandstone, Fall River Sandstone, Furon Shale, and Minnekahta Limestone. The Red Valley is composed of the Spearfish Formation, a red sandy shale.	Eutisols (Torriorthents), Mollics (Argiustolls, Haplustolls)	Buckee, Canyon, Ewing, Nevoe, Spearfish, Grammit, Tifford, Vale, Rockop	Mesic/ Udic	15-17	110-140	10/36; 57/86	Ponderosa pine woodlands with grass on steep slopes. Ponderosa pine, grasses, and hollyhock. Some burr oak in the north and Rocky Mountain juniper in the south.	Cattle grazing, ranching. Suburban development in the eastern Black Hills. Ponderosa pine savannah.	
17b. Black Hills Plateau	Unglaciated. Flat-topped plateau with broad ridges, entrenched canyons. In metamorphic zones, highly dissected, tilted rock faces, steep canyon slopes. In limestone areas caves, springs, consistently vernal water.	1507	3500-5500 / 600-1000	Paleozoic limestones of the Englewood Formation, Devonian Period, and Madison of the Missisquoi period. Sandstone and dolomite shales of Deadwood, Whiteoak and Minnekahta formations. Lower elevation metamorphic and granite outcrops.	Allisols (Eutrochrepts), Mollics (Haploborolls), Inceptisols (Entrochrepts)	Citadel, Vancor, Grizzly, Buska, Pactola, Moccasin, Pannaugast, rock outcrop	Frigid/ Udic, Udic	16-18	40-100	6/34; 56/83	Ponderosa pine forest dominant. Aspen, paper birch, some spruce in drainages and wet meadows. Endemic shales of Deadwood, Whiteoak, buffalobery, chokecherry, snowberry	Grazing and farming, recreation. Hunting, some timber production, woodlot grazing. Ponderosa pine forest with farms and ranches in valley bottoms, buffalobery, chokecherry, snowberry.	
17c. Black Hills Core Highlands	Mountainous topography with highly eroded outcrops and broad valleys. Limestone plateau above 5500 feet. Granite intrusions from the major peaks including Bear Mountain, Terry Peak, Custer Peak, and Harney Peak, the highest point in South Dakota at 7242 feet.	688	5500-7242 / 1000-1800	Precambrian igneous and sedimentary rock and metamorphic schist, slates, quartzite; granite and pegmatite. Higher elevation limestone.	Allisols (Cyroborolls, Eutroboralls)	Stovko, Trebor, Vorkala, McCromon, rock outcrop, Pactola, Buska	Frigid/ Cryic/ Udic	19-24	30-80	5/33; 55/80	Mostly ponderosa pine with white spruce, paper birch and aspen on north facing slopes, moist areas, and higher elevations. Understory: juniper, bearded wheatgrass, jumper, snowberry, Oregon grape, bearberry.	Mining in the metamorphic areas. Recreation, hunting, timber production, woodlot grazing. Fine and spruce forests, high meadows and granitic rock outcrops.	

44. NEBRASKA SAND HILLS													
Level IV Ecoregion	Physiography	Area (sq. miles)	Geology			Soil			Climate			Potential Natural Vegetation	Land Use and Land Cover
			Elevation / Local Relief (feet)	Surficial Material and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation (Mean annual (inches))	Frost Free (Mean annual (days))	Mean Temperature (January minimum, July maximum, (°F))			
44a. Nebraska Sand Hills	Sand sheets and extensive fields of horizontal sand dunes and sand dunes. High water table, intertidal wetlands.	488	2900-3500 / 120-300	Eolian sand over Miocene soft sandstone	Eutisols (Udipannamets)	Valentine	Mesic/ Udic	16-17	140-150	9/36; 58/81	Sand associated grasses: Sand bluestem, little bluestem, prairie sandreed. Big Bluestem and switchgrass in wetter interdune areas.	Cattle ranching, some hayland. Grassland cover.	

25. WESTERN HIGH PLAINS													
Level IV Ecoregion	Physiography	Area (sq. miles)	Geology			Soil			Climate			Potential Natural Vegetation	Land Use and Land Cover
			Elevation / Local Relief (feet)	Surficial Material and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation (Mean annual (inches))	Frost Free (Mean annual (days))	Mean Temperature (January minimum, July maximum, (°F))			
25a. Pine Ridge Escarpment	Unglaciated. Alternating ridges and valleys with entrenched canyons. Elevations increasing from northeast to southwest. Rock outcrops.	965	3000-3700 / 50-700	Miocene sandstone (Arikaree Formation), shale	Eutisols (Torriorthents), Mollics (Argiustolls, Haplustolls)	Ogallala, Canyon, Kadoka, Epping, Rock outcrops	Mesic/ Udic	16-17	120-140	9/36; 58/91	Ponderosa pine savanna with eastern redwood, western snowberry, shrubby sedge, chokecherry, and rose. Grassland: little bluestem, western wheatgrass, green needgrass, prairie sandreed.	Cattle grazing, mine and fuel crops, and some timber cutting. Pine savanna.	

46. NORTHERN GLACIATED PLAINS													
Level IV Ecoregion	Physiography	Area (sq. miles)	Geology			Soil			Climate			Potential Natural Vegetation	Land Use and Land Cover
			Elevation / Local Relief (feet)	Surficial Material and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation (Mean annual (inches))	Frost Free (Mean annual (days))	Mean Temperature (January minimum, July maximum, (°F))			
46a. Pembina Escarpment	Glaciated. Steep, dissected escarpment. High gradient perennial streams.	274	1225-1520 / 100-400	Glacial till over Tertiary sandstone and shale	Mollics (Haploborolls, Argioborolls, Calciborolls), Allisols (Eutroboralls)	Rollette, Olga, Kloten, Waikon, Kelvin, Buse, Walsh, Edgely	Frigid/ Udic	18-20	95-125	-10/10; 55/80	Burr oak dominant; some aspen and paper birch. Understory plants: beaked hazel, hickory crabapples (penobscot), service berry, red cedar dogwood.	On steep slopes, woodland retained for woodlot grazing and wildlife habitat. In flatter areas, cleared areas used for small grain, sunflowers and flax.	
46b. Turtle Mountains	Glaciated. Platform of hummocky, rolling terrain above surrounding drift plains. Stream network lacking. High concentration of large lakes and wetlands.	409	2000-2550 / 40-180	Glacial till over Tertiary sandstone and shale	Mollics (Calcicargolls, Endogargolls, Haploborolls, Narborolls)	Buttinnam, Buse, Rolla, Kelvin, Moigabo	Frigid/ Udic	16-22	95-120	-10/10; 53/80	Burr oak dominant on side slopes, aspen on top. Other species present: green ash, paper birch, boxelder, sumac, serviceberry, snowberry.	Native woodland and pasture clearings. Some hay and small grains on gentler slopes.	
46c. Glacial Lake Basins	Glaciated. Very level glacial lake floors. Low wetland density.	358	1300-1585 / 0-30	Glacial lake deposits	Mollics (Calcicargolls, Endogargolls, Haploborolls, Narborolls)	Hegre, Fargo, Beauden, Overly, Embden, Gardena, Glynodon, Great Bend, Aberdeen	Frigid/ Udic	16-19 (north) 20-22 (south)	95-120 (north) 120-140 (south)	-10/10; 54/80 (north) 1/21; 60/85 (south)	Western wheatgrass, needleandthread, blue grama, green needgrass.	Extensively tilled for durum and spring wheat, sunflowers, and flax. Corn and soybeans south.	
46d. Glacial Lake Delias	Glaciated. Flat sheets of sand and gravel or rolling sand dunes. Franchy of stream channels.	1877	1290-1595 / 60-685	Sand and gravel deposited over glacial lake floor	Mollics (Haploborolls, Calcicargolls, Argioborolls, Narborolls)	Hecla, Ulen, Arvilla, Sioux, Senon, Rosewood, Lohans, Binny, Hamar	Frigid/ Udic	16-19 (north) 19-23 (south)	95-120 (north) 128-140 (south)	-10/10; 54/80 (north) 4/19; 58/85 (south)	Prairie sandreed, little bluestem, indiangrass, switchgrass, sand bluestem.	Droughty soils mostly used for native pasture. When tilled, used for small grain, flax and fall-planted soy (north) or small grains, sunflowers, and corn (south). Some irrigation.	
46e. Tawakoni Dead Ice Moraine	Glaciated. Lower elevation extension of Prairie Coteau. Closely spaced hummocks, high wetland density.	960	1100-1300 / 5-75	Wisconsinan glacial till over Cretaceous Pierre Shale	Mollics (Argioborolls, Haploborolls, Argiargolls, Calciborolls)	Forman, Astand, Buse, Panell	Frigid/ Udic	19-21	120-140	-2/19; 58/85	Western wheatgrass, green needgrass, blue grama, needleandthread, sideoaks grama.	Mostly used for small grains and hay. Wetlands provide wildlife habitat.	
46f. End Moraine Complex	Glaciated. A diverse array of hummocky stagnation moraine, parallel and moraine ridges, and other glacial features such as eskers, kames and other ridges.	1518	1450-1790 / 20-170	Wisconsinan glacial till and outwash	Mollics (Haploborolls, Argioborolls, Calciborolls, Calcicargolls)	Heindal, Emerck, Edmond, Barnes, Buse, Ruttenow, Astand, Edgely, Hamery	Frigid/ Udic	18-20	90-120	-7/13; 55/82	Tallgrass/midgrass prairie: western wheatgrass, green needgrass, big and little bluestem, blue grama. Forest vegetation of burr oak and aspen associated with Devils Lake.	Mixed range and cropland depending upon slope and presence of rocks in soil. Spring wheat, oats, barley, flax, and hay.	
46g. Northern Black Prairie	Glaciated. Generally flat, with occasional "washboard" undulations. High concentration of temporary and seasonal wetlands. Simple drainage pattern.	504	1500-1970 / 5-200	Glacial till over Cretaceous Pierre Shale (check west) and Tertiary Ft. Union Formation.	Mollics (Haploborolls, Narborolls, Calciborolls, Argiargolls)	Barnes, Svca, Crestband, Hamery, Buse, Panell	Frigid/ Udic	16-20	95-120	-10/10; 54/80	Northern prairie: western wheatgrass, green needgrass, little bluestem, alfalfa.	Extensively tilled for durum and spring wheat, other small grains, sunflowers and alfalfa.	
46h. Northern Dark Brown Prairie	Glaciated. Generally flat, with occasional "washboard" undulations. High concentration of temporary and seasonal wetlands. Simple drainage pattern.	1114	1980-2220 / 8-100	Glacial till over Tertiary Ft. Union Formation.	Mollics (Argioborolls, Narborolls, Calciborolls, Argiargolls)	Williams, Bowbells, Zahl, Nonan, Hamery, Panell	Frigid/ Udic	15-16	100-120	-6/14; 54/82	Western wheatgrass, green needgrass, little bluestem and needleandthread. Aspen and green ash in drainages.	Extensively tilled for durum and spring wheat, other small grains, sunflower and alfalfa. Saline areas used for range or wildlife.	
46i. Drift Plains	Glaciated. Generally flat, with occasional "washboard" undulations. High concentration of temporary and seasonal wetlands. Simple drainage pattern.	1509	1080-2000 / 0-200	Glacial till over Cretaceous Pierre Shale and Fox Hills Formations.	Mollics (Haploborolls, Calcicargolls, Narborolls, Calciborolls, Argiargolls)	Barnes, Svca, Buse, Hamery, Crestband, Panell	Frigid/ Udic	17-19	95-125	-5/16; 56/83	Western wheatgrass, big and little bluestem, switchgrass, and indiangrass.	Extensively tilled for spring wheat and other small grains, sunflowers, and alfalfa.	
46j. Glacial Outwash	Glaciated. Flat to slightly rolling. Ancient channel depressions, retic lakes.	899	1300-1550 / 0-50	Sand and plane-bedded gravel, sediments of glacial meltwater rivers	Mollics (Haploborolls, Narborolls), Entisols (Udipannamets)	Brantford, Chair, Totten, Reinbow, Arvilla, Fordville, Sioux	Frigid/ Udic	16-18	110-130	-6/14; 54/80	Little bluestem, needleandthread, blue grama, prairie junegrass. Elm, ash, burr oak in river bottoms.	Cattle grazing on drought-tolerant soils. Tilled land produces wheat, oats, barley, eye and alfalfa.	
46k. Prairie Coteau	Glaciated. Platform of hummocky, rolling terrain raised above surrounding drift plains. Stream network lacking. High concentration of large lakes and wetlands.	529	1500-2010 / 50-150	Glacial till over Cretaceous Shales	Mollics (Argioborolls, Haploborolls, Argiargolls)	Forman, Astand, Buse, Poisset, Wauby, Panell	Frigid/ Udic	20-22	110-140	1/21; 60/85	Big and little bluestem, switchgrass, indiangrass, blue grama; woodland surrounding wetlands in northeast section.	Rolling areas in pastureland. Flatter areas tilled for small grains, corn, and soybeans.	
46l. Prairie Coteau Escarpment	Glaciated. Dissected topography along face of 300-600 ft. escarpment, incised by high gradient perennial streams.	415	1250-2000 / 250-600	Thin glacial till over Cretaceous limy shale (Niobrara Formation)	Mollics (Argioboroll, Calciborolls)	Pever, Forman, Sieche, Buse	Frigid/ Udic	20-22	110-135	2/22; 60/83	Burr oak, green ash, elm, aspen, burrowood, chokecherry, some with openings of little bluestem, green needgrass, western wheatgrass, and blue grama.	Steep areas in native woodland, used for pasture. Flatter areas tilled for small grains, corn, sunflowers, and alfalfa or used for pasture.	
46m. Big Sioux Basin	Only lightly glaciated. Erosional, rather than depositional landscape. Rolling, with incised stream drainage network, few wetlands.	1539	1625-1990 / 20-200	Glacial till over Cretaceous Pierre Shale	Mollics (Haploborolls)	Brookings, Kranzburg, Vienna, Lamore	Frigid/ Udic	20-22	110-140	2/22; 60/85	Tallgrass prairie: big and little bluestem, switchgrass, and indiangrass.	Extensively tilled for small grains, corn, sunflowers, and soybeans.	
46n. James River Lowland	Glaciated. Level to slightly rolling. Ancient composed of glacial drift. Dense concentrations of temporary and seasonal wetlands.	927	1200-1850 / 10-150	Glacial till over Cretaceous Pierre Shale and sandstone of Niobrara Formation.	Mollics (Argiustolls, Haploborolls, Narborolls)	Beidle, Dudley, Ham, Bonills, Houdek, Prosper	Mesic	18-20	115-140	1/22; 60/87	Western wheatgrass, green needgrass, big bluestem, blue grama.	Extensively tilled for spring wheat, sunflowers, corn, and soybeans.	
46o. Minnesota River Prairie	Glaciated. Level to gently rolling plain. Moderate wetland density.	826	1050-1300 / 50-100	Glacial till over undivided Cretaceous sediments (Dakota Sandstone, Carlisle and Pierre Shale).	Mollics (Haploborolls), Entisols (Udorthents)	Heindal, Svca, Sisston	Frigid/ Udic	20-22	110-140	2/22; 60/85	Big and little bluestem, green needgrass, western wheatgrass, blue grama. Elm, boxelder, and green ash along river bottoms.	Extensively cultivated to small grains, corn, soybeans, and alfalfa.	

43. NORTHWESTERN GREAT PLAINS													
Level IV Ecoregion	Physiography	Area (sq. miles)	Geology			Soil			Climate			Potential Natural Vegetation	Land Use and Land Cover
			Elevation / Local Relief (feet)	Surficial Material and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation (Mean annual (inches))	Frost Free (Mean annual (days))	Mean Temperature (January minimum, July maximum, (°F))			
43a. Missouri Plateau	Unglaciated. Moderately dissected level to rolling plains with isolated sandstone benches.	2000	1750-3300 / 50-500	Tertiary sandstone, shale and some coal. In South Dakota: Ludlow, Fox Hills, and Fort Union Formations; in North Dakota: Ludlow, Cannonball, Sleep, Bullion Creek, and Sentinel Butte Formations.	Mollics (Haploborolls, Entisols (Udorthents, Utipannamets), Mollics (Udorthents, Utipannamets), Mollics (Haploborolls)	Vehar, Chama, Amor, Williams, Rhoades, Bedford, Cabba, Flasher, Reeder, Regent, Parshall, Gova, Zall	Frigid/ Udic	15-17	95-130	3/21; 55/83	Blue grama, wheatgrass/needgrass association, little bluestem, prairie sandreed.	Dryland farming and cattle grazing. Spring wheat a predominant crop with acreage of barley, oats, and sunflowers. Native areas consist of mixed grasses.	
43b. Little Missouri Badlands	Unglaciated. Highly dissected erosional landscape of conical hills. Mass wasting and slumping widespread. Most streams ephemeral. Flowing streams carry heavy sediment loads.	252	1850-3000 / 250-500	Paleocene sediments of the Bullion Creek and Sentinel Butte Formations.	Eutisols (Udorthents, Utipannamets), Mollics (Haploborolls)	Cabhart, Fleck, Zezema, Boswell, Dugsworth Maltese, Patent, Hevrs, Gladwin, Wolfpoint	Frigid/ Udic (Arctic inter-grade)	14-16	110-120	1/24; 56/85	Shortgrass prairie: western wheatgrass, blue grama, little bluestem, prairie sandreed. Rocky Mountain juniper in draws and on north slopes. Scattered cottonwood in riparian areas.	Cattle ranching, wildlife habitat and recreation. Bare hills with scattered junipers; grasslands in bottomlands.	
43c. River Breaks	Unglaciated. Highly dissected hills and uplands bordering major rivers and associated alluvial plains.	10517	1300-2700 / 200-500	In North Dakota, Tertiary sandstone and shale (Fort Union Formation). In South Dakota: Cretaceous Pierre Shale, on the west side of the Missouri River; on the east side of the Missouri River, breaks eroded through glacial till to Tertiary and Cretaceous foundation.	Mollics (Calciborolls, Haploborolls), Entisols (Udorthents, Utipannamets), Vertisols (Haplustolls, Vertisols (Haploenters), Inceptisols (Udorthents))	Sansarc, Opal, Bullock, Cabba, Amor, Flasher, Vehar, Temvik, Mandan, Cherry, Chama, Zall, Calke, McKee	Frigid/ Udic (Arctic inter-grade)	16-18	80-125 (north); 56/87 (north) 100-130 (south) 60/91 (south)	-3/21; 56/87 (north) 3/21; 60/91 (south)	Blue grama, western wheatgrass, buffalograss, and some bluestem. Juniper and deciduous trees on little north-facing slopes. Cottonwood gallery forests on the floodplain.	Steep slopes restrict local cattle grazing. Land cover is mostly prairie and woodland. Remnant woodlands in draws and on existing (impounded) alluvial fans.	
43d. Forested Buttes	Unglaciated. Prominent buttes with steep vertical sides. Source of springs and drainage headwaters.	252	3100-3650 / 250-550	Sandstone with concretions and local quartzite (Arikaree Formation).	Eutisols (Udorthents), Allisols (Eutroborolls)	Cabba, Cabhart, Reva, Rocosa, Coburn, rock outcrop	Frigid/ Udic	13-14	90-120	3/26; 55/86	Ponderosa pine, Rocky Mountain juniper, snowberry. Green ash in drainages. Little bluestem dominates the grasslands.	Logging, grazing on National Forest land.	
43e. Sagebrush Steppe	Unglaciated. Level to rolling plains with occasional buttes, badland formations, scoria (burnt coal) mounds and salt pans.	2457	3000-3475 / 50-350	Upper Cretaceous sandstone and shale (Hell Creek Formation and Pierre shale).	Aridisols (Natrargolls, Inceptisols (Udorthents), Entisols (Udipannamets, Udorthents), Mollics (Natrborolls, Haploborolls)	Achin, Parchin, Tinckup, Zozna, Bullock, Cabhart, Boxwell, Rhoades, Patent Maltese, Rhane, Dhais	Frigid/ Udic (Arctic inter-grade)	13-14	90-120	3/26; 55/86	Dwarf sagebrush, big sagebrush, with western wheatgrass, green needgrass, blue grama, Sandberg bluegrass, and buffalograss.	Cattle grazing and wildlife habitat. Grassland and shrub cover.	
43f. Subhumid Pierre Shale Plains	Unglaciated. Undulating plain. Steep-sided, incised stream channels.	7544	1700-2800 / 50-500	Cretaceous Pierre shale	Mollics (Argiustolls, Haploborolls), Inceptisols (Udorthents), Entisols (Udorthents, Torriorthents), Vertisols (Haploenters)	Milthreo, Lakoma, Opal, Prunsee, Sansarc, Midway, Otumwa	Mesic/ Udic	15-17	110-135	4/29; 60/91	Wheatgrass, grama grass, needgrass, porcupine grass, needleandthread.	Cattle grazing, dryland farming. Winter wheat, alfalfa and sorghum.	
43g. Semiarid Pierre Shale Plains	Unglaciated. Undulating to rolling plains. Steep-sided, incised stream channels.	3853	2500-3700 / 100-300	Cretaceous Pierre shale	Aridisols (Carnborolls), Mollics (Natrborolls), Entisols (Torriorthents)	Pierre, Sansarc, Lissim, Sattana, Num	Mesic/ Arlic/ Udic	14-15	125-140	6/29; 57/87	Shortgrass prairie grasses such as western wheatgrass, green needgrass, blue grama and buffalograss.	Cattle grazing, rangedland. Dryland farming of winter wheat and alfalfa. Blue grama and buffalograss.	
43h. White River Badlands	Unglaciated. Highly dissected landscape of eroded walls and escarpments, isolated tablelands and buttes. Dense, dendritic drainage pattern; ephemeral streams highly erosive.	1913	2450-3250 / 150-450	Oligocene Brule and Chadron claystone formations (White River Group over Cretaceous Pierre Shale).	Aridisols (Carnborolls), Entisols (Torriorthents), Vertisols (Haploenters)	Conata, Epping, Inlay, Otella, Bufon	Mesic/ Ardic/ Udic	16-17	120-140	6/35; 59/91	Sand sagebrush, silver sagebrush, western wheatgrass, grama grass and buffalograss.	Cattle grazing. Range and hayland.	
43i. Keya Paha Tablelands	Unglaciated. Level to rolling, sandy plains. Dissected near streams.	3451	2250-3600 / 20-800	Eolian and alluvial sand and silt over Miocene soft sandstone (Ogallala Formation).	Mollics (Argiustolls, Haploborolls), Entisols (Torriorthents)	Ausstim, Kadoka, Keith, Mante, Rosebud, Epping, Kota, Rossum, Vetal	Mesic/ Udic	16-20	120-140	9/34; 59/89	Blue grama, sideoaks grama, western wheatgrass, little bluestem, and needleandthread.	Cattle ranching predominates north with some dryland farming for alfalfa and winter wheat. Corn and sugar beets in irrigated areas south. Mixed prairie range with cropland.	
43j. Moreau Prairie	Unglaciated. Level to rolling plains with occasional buttes, badland formations, and salt pans.	4138	2100-3200 / 120-250	Upper Cretaceous sandstone and shale (Hell Creek Formation).	Aridisols (Natrargolls), Allisols (Nannustolls), Mollics (Natrborolls, Argioborolls, Haploborolls), Inceptisols (Udorthents)	Bullcock, Parchin, Abster, Rhoades, Sornan, Reeder, Amor, Baskaia, Jemareburg, Moreau, Twilight	Frigid, Mesic/ Udic, Ardic/ Udic	14-16	115-130	6/30; 58/87	Mixed prairie of western wheatgrass, green needgrass, blue grama and buffalograss.	Mostly cattle and sheep ranching. Occasional dryland farming of wheat and alfalfa.	
43k. Dense Clay Prairie	Unglaciated. Rolling prairie. Intermittent streams in shallow valleys.	1378	2700-3500 / 150-450	Cretaceous Pierre shale	Vertisols (Haploenters, Torrens), Ardisols (Natrargolls), Entisols (Torriorthents)	Kyle, Pierre, Winter, Swanboy, Hele, Lisnas	Mesic/ Udic, Ardic/ Udic	13-15	120-130	6/30; 58/87	Western wheatgrass with no shortgrass undergrass.	Sheep and cattle ranching. Fragile grassland cover.	

47. WESTERN CORN BELT PLAINS													
Level IV Ecoregion	Physiography	Area (sq. miles)	Geology			Soil			Climate			Potential Natural Vegetation	Land Use and Land Cover
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47a. Loess Prairies	Gently rolling in the northern section, more dissected in the southern section. Streams have a quartzite substrate providing diverse habitat for aquatic life.	1104	1200-1700 / 40-120	Loess deposits over Cretaceous sandstone, shale (Niobrara Formation and Carlisle Shale), and Sioux quartzite.	Mollics (Haploborolls)	Moody, Nory, Trent	Mesic/ Udic	23-25	135-165	8/30; 63/88	Tallgrass prairie: big and little bluestem, indiangrass, and indiangrass. In southern section on steeper slopes, needleandthread and prairie dropseed, and deciduous woodland.	Intensive row crop agriculture (corn, soybeans, alfalfa, grain sorghum). Some rearing. Some urban development. Deciduous woodland in the southern section.	
47b. Missouri Alluvial Plain	Level floodplain alluvium. Riparian wetlands largely drained.	349	1100-1200 / 3-25	Alluvial deposits over Cretaceous sandstone and shale (Carlisle Shale and Dakota Sandstone).	Entisols (Fluvioaquents, Udipannamets, Udifluvents), Mollics (Haploborolls, Endogargolls)	Lams, Laton, Althaus, Haynie, Sippy	Mesic/ Udic	23-25	135-165	8/30; 63/88	Northern floodplain forest of cottonwood, green ash, boxelder, and elm; shrubs and woody vines in the understorey.	Intensively farmed for corn and soybeans. Transportation corridor.	

48. LAKE AGASSIZ PLAIN													
Level IV Ecoregion	Physiography	Area (sq. miles)	Geology			Soil			Climate			Potential Natural Vegetation	Land Use and Land Cover
			Elevation / Local Relief (feet)	Surficial Material and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation (Mean annual (inches))	Frost Free (Mean annual (days))	Mean Temperature (January minimum, July maximum, (°F))			
48a. Glacial Lake Agassiz Basin	Extremely flat glacial lake plain. Streams and rivers sluggish, meandering, and highly turbid with large sediment loads. Ditching and channelization common.	5137	790-1200 / 1-50	Thick beds of glacial drift, averaging 150-200 ft. overlain by up to 95 ft. of silt and clay lacustrine deposits from Glacial Lake Agassiz. Bedrock geology: Cretaceous shales and sandstone, Ordovician and Precambrian basement rocks.	Mollics (Calcicargolls, Endogargolls, Haploborolls, Natrargolls)	Beauden, Hegre, Glynodon, Ulen, Fargo, Gardena, Embden, Ryan	Frigid/ Udic	18-21	95-125	-7/12; 56/82	Tallgrass prairie: big and little bluestem, switchgrass, and indiangrass. Cottonwood, willow, green ash, burr oak and American elm in riparian areas and on the Pembina Delta.	Intensive row crop agriculture. Potatoes, cottonseed, yellow, green and red clover. Farmland with woodlot or shelterbelt plantings. Urban and rural residential development.	
48b. Sand Deltas and Beach Ridges	Parallel ridges up to several miles wide (composed of medium sand to medium gravel). Delta comprised of lenses of fine to coarse sand. Thickest sand deposits windblown into dunes. Soils sub-saturated, sand or gravel rillies, contrast with clay and silt-bottom streams elsewhere in Red River Valley.	1616	900-1200 / 40-250	Stratified sand and gravel beach and strand line deposits sorted from lacustrine silt. Sandy deltaic deposits.	Mollics (Haploborolls, Calcicargolls, Endogargolls), Entisols (Udipannamets, Psammopsent)	Embsen, Inkster, Hamar, Wytomske, Arvilla, Hecla, Swadlow, Renshaw, Yang, Arveston, Bunty	Frigid/ Udic	18-21	95-125	-7/12; 56/82	Tallgrass prairie with patches		