14	Level IV Ecoregions		JAVE BASIN ANI Physiography	D RAN	Geology		Soils			Climate	<u>,</u>	Natural Vegetation	Land Cover and Land Use
-		Area (square miles)	i nysiogi apity	Elevation / Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature / Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual	Mean Temperature January min/max; July min/max (°F)	Taturar Tegetativii	Zuna Covel and Land Use
4a.	Eastern Mojave Basins	2027	Flat to gently sloping basins and valleys with bajadas, alluvial fans, plains, eroded washes, stream terraces, and floodplains. A few isolated hills and buttes occur. Surface water is scarce, with mostly ephemeral streams and scattered springs.	1600-4200 / 100-600	Quaternary alluvium and eolian deposits. Small, scattered hills are mostly Tertiary volcanic rocks or Precambrian granitic rocks.	Aridisols (Calciargids, Haplargids, Petrocalcids, Haplocambids, Haplocalcids), Entisols (Torriorthents, Torrifluvents)	Poachie, Mohon, Jagerson, Dutchflat, Bluebird, Blind, Castaneda, Winkel, Mormon Mesa, Lostman, Detrital, Kinley, Arizo, Rift	Thermic / Aridic	7-11	200-280	33/57; 71/100	Creosotebush, white bursage, pricklypear and cholla cacti, yucca, Mormon tea, and some blackbrush. Grasses are sparse, with some big galleta, bush muhly, and Indian ricegrass. Some areas are nearly barren of vegetation. A few Joshua trees at higher elevations. Riparian areas with	Shrubland, some barren land. Ranching and low-density livestock grazing, wildlife habitat recreation, rural residential, minor urban in Kingman area, public land (BLM, State Trust)
	Eastern Mojave Low Ranges and Arid Footslopes	1749	Virgin River in northwest Arizona is perennial. Hills and low mountains, alluvial fans, some lava flows and mesas. Mostly ephemeral and intermittent streams, some springs.	1800-5456 / 800-2000	Quaternary alluvium, colluvium, and block-rubble colluvium. Tertiary (Pliocene to Miocene) conglomerate, sandstone, and basalt lava; Tertiary (Miocene to Oligocene) volcanic rocks; early Tertiary to late Cretaceous granitic rocks; Paleozoic (Permian to	Entisols (Torriorthents), Aridisols (Haplodurids, Haplocambids, Haplargids)	Hulda, Razorback, Fig, Hindu, Goldroad, Sunrock, Tumarion, Cupel, Mayswell, Azure, Blind	Thermic, some Hyperthermic at low elevations near Colorado River and Lake	8-12	180-250	35/54; 72/97	willows, mesquite, and exotic tamarisk. Scattered creosotebush, white bursage, Joshua trees and other yuccas, blackbrush, winterfat, spiny menodora, Mormon tea, big galleta, Indian ricegrass, and annual fescue. On rocky sites: cacti including silver cholla and beavertail. Annual plants are episodically abundant when	Shrubland, barren land. Wildlife habitat, wilderness, recreation, rangeland, mineral min public land (BLM, State Trust).
	Eastern Mojave Mountain Woodland and Shrubland	87	Hills and mountains with steep slopes and canyons. Mostly ephemeral and intermittent streams, some springs.	4000-7142 / 1000-3000	Pennsylvanian) sandstone and limestone in the north; Precambrian granitic and metamorphic rocks.	Aridisols (Haplocambids, Haplargids)	Vock, Elements	Mead / Aridic Mesic / Ustic Aridic	12-14	160-180	29/50; 65/89	sufficient winter precipitation is received. Singleleaf pinyon, Utah juniper, turbinella oak, Gambel oak, desert ceanothus, manzanita, mountain-mahogany, cliffrose, yellowleaf silktassel, needlegrass, a few ponderosa pines at high elevations.	Evergreen forest and woodland, some shrublar Wildlife habitat, wilderness, recreation, rangel mineral mining, public land (BLM).
	Arid Valleys and Canyonlands	1232	Canyons, benchlands, alluvial fans, terraces, and floodplains in the Colorado River corridor. Ephemeral and intermittent streams, except for the Colorado River.	450-3068 / 100-1600	Quaternary alluvium and colluvium. Tertiary (Pliocene to Miocene) conglomerate, sandstone, basalt, and andesite; Miocene to Oligocene volcanic and granitic rocks; Precambrian gneiss, schist, and granitic rocks.	Aridisols (Haplocalcids, Haplodurids, Calciargids), Entisols (Torriorthents, Torripsamments, Torrifluvents)	Huevi, Carrizo, Riverbend, Chuckawalla, Tyro, Rositas, Goldroad, Carrwash, Sunrock. On lower Mohave Valley cropland: Ripley, Indio, Gadsden, Meloland.	Hyperthermic / Aridic	5-9	260-340		Creosotebush, brittlebush, white bursage, mesquite, paloverde, and occasional Sonoran species such as ocotillo. Along larger rivers: native riparian plants, such as Fremont cottonwood and willow, are being replaced by exotic tamarisk.	Sparse shrubland, barren land, some cropland and pasture in Mohave Valley near Colorado River (mostly hay, alfalfa, cotton, and wheat), some wetlands at Topock Marsh. Wildlife hab rangeland, and recreation. Mostly public land (NPS–Lake Mead National Recreation Area, N
4f.	Mojave Playas	23	Broad, nearly level alluvial flats and lake	2750-2800 /	Quaternary (Holocene) eolian and alluvial playa	Playa sediments. Near edges: Entisols	Playa sediments. Near edges: Rift,	Thermic /	8-9	220-260	32/57;	Vegetation mostly absent but some scattered, salt-tolerant	and BLM–Grand Canyon-Parashant National Monument, USFWS–Havasu National Wildlingefuge). Some tribal land (Fort Mohave). Mostly barren, some sparse shrubland. Wildlinger
	Lower Grand	847	plains. Intermittent saline lakes. Deep, eroded canyons, mesas, buttes, benches, steep cliffs, talus slopes, colluvial fans, river	5-10 1300-6100 / 2000-4000	Quaternary alluvium, colluvium, and block-rubble colluvium, Quaternary Colorado River terrace and	(Torrifluvents), Aridisols (Natrargids) Aridisols (Petrocalcids, Haplocalcids, Calciargids, Haplocambids,	Dusty. Rock outcrop, various rock outcropsoil complexes, Hindu, Splanod,	Aridic Thermic, some Hyperthermic	8-12	140-280	34/56;	plants occur, typically near outer margins, such as iodinebush, saltgrass, fourwing saltbush, and alkali sacaton. Creosotebush, white bursage, blackbrush, yuccas, agave, black grama, some brittlebrush and ocotillo. At highest	habitat. Some public land (BLM). Shrubland and barren land. Wildlife habitat, recreation and tourism. Mostly public land
	Canyon		gorge and floodplain. Mostly ephemeral and intermittent streams, plus the large, perennial Colorado River. Some springs and seeps.	2000-4000	gravel deposits, some Quaternary travertine deposits and Quaternary basalt. Bare rock is common. Paleozoic (Permian to Cambrian) limestone, sandstone, siltstone, dolomite, shale, and conglomerate; some Precambrian granite near river.	Haplargids), Entisols (Torriorthents, Torripsamments, Torrifluvents)	Merriwhitica, Rizno, Rolie, Havasupai	at low elevations and Mesic at high elevations / Aridic, Ustic Aridic				elevations, some Utah juniper and pinyon pine. In riparian areas, mesquite, willows, exotic tamarisk, catclaw acacia, and arrowweed.	(NPS–Grand Canyon National Park) and tribland (Hualapai).
2 O .	evel IV Ecoregion		LORADO PLATE A	AUS	Geology		Soils			Climate		Natural Vegetation	Land Cover and Land Use
_	ever i v Deoregion	Area (square miles)		Elevation/ Local Relief (feet)	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Temperature/ Moisture Regimes	Precipitation Mean annual (inches)	Frost Free Mean annual	Mean Temperature January min/max; July min/max (°F)	, and the second	
	Semiarid Benchlands and Canyonlands	/	Mesas, benches, cuestas, cliffs, and canyons. Mostly ephemeral and intermittent streams.	5000-7326 / 200-1000	Quaternary colluvium, alluvium, eolian, and residual materials. In the Uinkaret/Kanab Plateau area of the west, Permian limestone and sandstone with some Quaternary basalt. To the north and east, Jurassic to Triassic sandstone, siltstone, mudstone, shale, and conglomerate.	Entisols (Torripsamments, Torriorthents, Quartzipsamments, Ustipsamments), Aridisols (Haplocalcids, Haplargids, Calciargids, Petrocalcids), Mollisols (Calciustolls)	In Uinkaret/Kanab Plateau area of the west: Mellenthin, Kinan, Moab, Anasazi, Poley, Progresso, Yumtheska, and Curhollow. To the north and east: Bidonia, Bond, Barx, Royosa, Arches, Pensom, Deleco,	Mesic / Mostly Ustic Aridic, some Typic Aridic and Aridic Ustic	8-16	120-180	19/41; 62/90	Utah junipers, pinyon pine at higher elevations, Gambel oak, Wyoming big sagebrush and Bigelow sagebrush, winterfat, Mormon tea, fourwing saltbush, shadscale, antelope bitterbrush, galleta, Indian ricegrass, and blue grama.	Shrubland, some grassland and evergreen woodland. Livestock grazing, wildlife habita recreation, wilderness. Mostly public land (I State Trust) and tribal land (Navajo, Kaibab)
	Arid Canyonlands	1264	Narrow canyons, cliffs, benches, mesas, cuestas, and valley floors. Terrain deeply eroded by major rivers and their tributaries. Mostly ephemeral and intermittent streams, except for Colorado River. Lower Chinle Wash and lower Walker Creek near Utah border and portions of Laguna Creek	3600-6223 / 200-1200	Quaternary alluvium, colluvium, eolian, and residual materials. Jurassic sandstone and siltstone, Triassic mudstone and sandstone, Permian to Pennsylvanian sandstone and siltstone. Bare rock (i.e., slick rock) is common.	Aridisols (Haplocalcids, Haplogypsids), Entisols (Torriorthents, Torripsamments)	Nalcase, Mespun, Parkwash, Rizno. Pagina, Wahweap, Nakai, Tohatin, Sheppard, Needle, Moenkopie, Piute	Mesic / Aridic	5-8	160-240	20/42; 65/97	Sparse desert scrub with blackbrush, shadscale, Mormon tea, fourwing saltbush, and some drought-tolerant grasses, including galleta, sand dropseed, and Indian ricegrass. In riparian areas, cottonwood and willow is often invaded by exotic tamarisk and Russian olive.	Barren, some shrubland and grassland. Wild habitat, recreation, low-density livestock gra Mostly tribal land (Navajo) and some public (NPS–Glen Canyon National Recreation Are BLM).
e.	Escarpments	144	near Kayenta are perennial in some years. High, dissected cliffs, escarpments, mesa top margins, and breaks with a wide elevational range. In Arizona, it includes the Vermilion Cliffs and Paria Canyon. Mostly ephemeral and intermittent streams. The Paria River is	3200-7200 / 1000-3000	Quaternary alluvium, colluvium, block-rubble colluvium. Jurassic sandstone and siltstone; Triassic mudstone, sandstone, and conglomerate. Rock outcrops are common.	Entisols (Torriorthents, Torripsamments, Ustipsamments)	Mostly rock outcrop; small areas of Arches, Sheppard, Needle, Somorent, Tonalea.	Mesic / Ustic Aridic	8-16	180-220	23/46; 63/94	Cliff faces and boulder-strewn slopes are mostly barren, with some areas of desert scrub or pockets of drought-tolerant grasses such as galleta and Indian ricegrass. Utah junipers and pinyon pine at higher elevations. In riparian areas, cottonwood and willow with some ash and box elder.	Shrubland, barren, some evergreen woodland Recreation, wildlife habitat. Steep slopes lim uses. Mostly public land (BLM–Paria Canyo Vermilion Cliffs Wilderness, NPS–Glen Can National Recreation Area) and tribal land (K
0h.	Sand Deserts	441	perennial. Some springs occur. Nearly level to irregular basins containing plains, terraces, and dunes. Flat-top benches are found locally. Streams are mostly ephemeral or intermittent. Kanab Creek from Utah border to Fredonia is usually perennial.	4800-6382 / 50-600	Quaternary eolian deposits and sand- and gravel- alluvium. Triassic mudstone, sandstone, and conglomerate in west; Jurassic sandstone and siltstone in east. Typically characterized by shifting eolian material over bedrock.	Entisols (Torripsamments, Torriorthents), Aridisols (Calciargids, Haplocambids, Haplocalcids)	In west: Mido, Palma, Barx, Grieta, Begay. In east: Marcou, Sheppard, Aneth, Monue, Needle, Moffat, and Sogzie.	Mesic / Aridic, Ustic Aridic	6-13	130-170	21/45; 63/93	Vegetation typically sparse. Some desert or semi-desert grasses, including galleta, sand dropseed, Indian ricegrass, and three awn; desert shrubs of sandsage, yucca, and blackbrush, and some annual forbs.	Shrubland and some desert grassland. Wildli habitat, recreation, and low-density livestool grazing. Mostly tribal land (Navajo) and son public land (BLM, State Trust).
	Cold Desert Sagebrush- Grasslands	847	Irregular plains, tablelands, and valleys. Ephemeral and some intermittent streams and washes.		Quaternary alluvium, eolian, and residual materials. Triassic mudstone and sandstone, some Permian limestone and sandstone.	Aridisols (Calciargids, Haplargids, Haplocalcids, Calcigypsids, Haplogypsids, Petrocalcids), Entisols (Torrifluvents, Torriorthents)	Clayhole, Jocity, Grieta, Brinkerhoff, Kinan, Dutchman, McCullan, Goblin, Pennell, Havasupai, Klondike	Mesic / Aridic, Ustic Aridic	9-13	130-180	23/48; 61/94	Desert scrub and grassland with winterfat, fourwing saltbush, sand sagebrush, Mormon tea, rabbitbrush, buckwheat species, needlegrass, bottlebrush squirreltail, Indian ricegrass, gramas, gyp dropseed, and galleta.	Shrubland and desert grassland. Low-density livestock grazing, wildlife habitat, recreation Mostly public land (BLM, State Trust).
22.	Level IV Ecoregions		IZONA/NEW MEX Physiography		Geology		Soils			Climate		Natural Vegetation	Land Cover and Land Use
اد د	Vincia ICI ·	Area (square miles)	Steen disposted	Elevation / Local Relief (feet) 4000-8012 /	Surficial and Bedrock Ouaternary alluvium colluvium and recidual materials	Order (Great Group) Mollisols (Haplustolls, Calciustolls	Common Soil Series Virgin Peak Vumtheska Tsezhin	Temperature / Moisture Regimes	Mean annual (inches)	Mean annual . (days)	Mean Temperature January min/max; July min/max (°F)	Dinyon juning weedlend till to the con-	Evergroon forcet and
2d.	Virgin/Shivwits Woodland	665	Steep, dissected mountains and hilly plateaus. Mostly ephemeral and intermittent streams, with some springs.	400-8012 / 400-3000	Quaternary alluvium, colluvium, and residual materials. Permian limestone and sandstone, Triassic mudstone and sandstone, Tertiary and Quaternary basalt, Pennsylvanian to Permian sandstone and siltstone, Precambrian schist and gneiss.	Mollisols (Haplustolls, Calciustolls, Argiustolls, Paleustolls), Alfisols (Haplustalfs), Vertisols (Haplusterts), Aridisols (Petrocalcids)	Virgin Peak, Yumtheska, Tsezhin, Ashfork, Yellowhorse, Springerville, Pocum, Natank, Disterheff, Showlow, Thunderbird, Kellypoint, Bilburc	Mesic / Ustic Aridic, Aridic Ustic	12-16	110-180	23/45; 60/86	Pinyon-juniper woodland with singleleaf pinyon, Utah juniper, mountain big sagebrush, snowberry, Gambel oak, Utah serviceberry, cliffrose, muttongrass, and blue grama. Some ponderosa pine at higher elevations and in cool, upper drainages. In the Virgin Mountains of AZ and NV, juniper can mix with Joshua tree, Mojave yucca, or interior chaparral species at lower elevations, while isolated, small stands of Douglas-fir and white fir occur at high elevation.	Evergreen forest and woodland, shrubland. Wildlife habitat, recreation, livestock grazin Mostly public land (BLM and NPS–Grand Canyon-Parashant National Monument, NPS Mead National Recreation Area).
	San Juan/Chaco Tablelands and Mesas	117	Mesas, benches, cliffs, canyons, fan terraces, and valleys. Mostly ephemeral and some intermittent streams.	4950-6600 / 200-600	Quaternary discontinuous, thin, sandy eolian deposits; colluvium with large areas of bedrock outcrop, colluvium with valley-fill alluvium. Cretaceous sandstone and shale; Jurassic mudstone, sandstone, and siltstone; Triassic mudstone and sandstone.	Aridisols (Calciargids, Haplargids, Haplocambids, Natrargids), Entisols (Torripsamments)	Millett, Sogzie, Marjane, Whit, Blanding, Beclabito, Kitsili, Arches, Mido	Mesic / Ustic Aridic, Aridic	7-10	140-180	18/42; 58/91	Mix of desert scrub, semi-desert shrub-steppe, and semi-desert grasslands. Shadscale, fourwing saltbush, greasewood, Mormon tea, Indian ricegrass, alkali sacaton, galleta, blue and black gramas. A few Utah junipers at highest elevations.	Shrubland, some areas of sparse grassland, of barren. Low-density livestock grazing of cat sheep, goats, and horses; dispersed low-dens rural residential. Tribal land (Navajo).
2j.	Semiarid Tablelands	4185	Mesas, plateaus, cliffs, canyons, and valleys. Mostly ephemeral and intermittent streams; a few perennial streams from Ecoregion 23.	5000-7575 / 300-1500	Quaternary alluvium, colluvium, and residual materials; basalt flows, and some discontinuous eolian deposits. Miocene to Pliocene conglomerate and sandstone, Triassic mudstone and sandstone, Permian limestone and sandstone, and areas of Pliocene to Holocene volcanic fields.	(Torripsamments)	Clovis, Hubert, Rudd, Palma, Barx, Bisoodi, Mellenthin, Chedeski, Ubank, Boysag, Padilla, Tuweep, Wukoki, Lomaki, Wupatki, Nalaki, Winona, Tusayan, Epikom, Penistaja, Doakum, Betonnie, Pinavetes, Sheppard	Mesic / Ustic Aridic, Aridic Ustic	10-18	120-160	18/45; 56/88	Shrub and grassland with alkali sacaton, shadscale, fourwing saltbush, black grama, blue grama, sideoats grama, Indian ricegrass, galleta, western wheatgrass, rabbitbrush, and some winterfat. Some scattered juniper and pinyon-juniper woodland (generally less dense than in the New Mexico portion of 22j).	Shrubland, grassland, some evergreen wood Ranching and livestock grazing, wildlife hab dispersed rural residential. Some tribal land (Navajo) and public land (State Trust, BLM, USDA-FS-margins of Kaibab, Coconino, ar Apache-Sitgreaves National Forests).
	Northeast Arizona Shrub-Grasslands	3845	Gently sloping to irregular and dissected plateaus, irregular plains and valleys, mesas, buttes, and badlands. Mostly ephemeral and intermittent streams.	4800-6250 / 200-800	Quaternary alluvium and residual materials, some discontinuous eolian deposits. Triassic mudstone and sandstone, Miocene to Pliocene conglomerate and sandstone, Permian limestone and sandstone, Jurassic sandstone and siltstone, Cretaceous sandstone and shale, a few small areas of Pliocene to Holocene volcanic rocks.	Aridisols (Haplocambids, Haplogypsids, Haplocalcids, Calciargids, Haplargids), Entisols (Torripsamments, Torrifluvents, Torriorthents)	Epikom, Purgatory, Needle, Sheppard, Bisoodi, Winona, Arntz, Navajo, Tours, Clovis, Jocity, Ives, Claysprings, Grieta, Redlands, Monue, Burnswick, and areas of badlands.	Mesic / Aridic, Ustic Aridic	7-12	120-170	19/46; 59/92	Shrub and grassland with shadscale, fourwing saltbush, Mormon tea, blackbrush, Indian ricegrass, black grama, blue grama, galleta, and alkali sacaton.	Shrubland and some grassland. Ranching an livestock grazing, wildlife habitat, dispersed density rural residential. Some tribal land (N Hopi) and public land (State Trust, BLM, NI Petrified Forest National Park).
2p.	Little Colorado Valley/Painted Desert	2140	Irregular plains, valleys, and basins with meandering river floodplain, alluvial terraces, and adjacent mesas, buttes, hills, and badlands. Mostly ephemeral and intermittent streams.	4200-5700 / 100-600	Quaternary alluvium and residual materials, discontinuous eolian deposits, fluvial sand and gravel. Triassic mudstone, sandstone, and conglomerate; some Jurassic sandstone.	Entisols (Torripsamments, Torrifluvents, Torriorthents), Aridisols (Haplocambids, Haplocalcids, Haplargids)	Sheppard, Needle, Epikom, Jocity, Joraibi, Leupp, Claysprings, Purgatory, Tuba, Nakai, Tours, Ives, Burnswick, Navajo, Hoskinnini, and areas of badlands.	Mesic / Aridic	5-9	140-190	20/47; 62/96	Mound saltbush, fourwing saltbush, shadscale, alkali sacaton, galleta, gyp dropseed, black grama, Indian ricegrass, yucca, Mormon tea, and black greasewood. On floodplains, mostly exotic tamarisk, with some scattered cottonwood and willow.	Shrubland, grassland, and barren land. Minor land cover in Winslow and Holbrook areas. Sareas of herbaceous or woody wetlands and hay/pasture land along the Little Colorado R the east. Ranching and livestock grazing, will habitat, dispersed rural residential. Mostly tributed to the control of the control
22q.	Dinétah Tablelands	4187	Plateaus, mesas, and rolling uplands, with moderately dissected hillslopes, and narrow valleys and canyons. Mostly ephemeral and intermittent streams; numerous springs.	5200-7570 / 300-1200	Quaternary alluvium, colluvium, and residual materials; some discontinuous areas of eolian deposits. Cretaceous sandstone with interbedded shale and coal; to the east, Miocene to Pliocene conglomerate and sandstone, Triassic conglomerate, sandstone, and mudstone, and Permian limestone and sandstone.	Aridisols (Haplocambids, Haplocalcids, Haplargids), Entisols (Torriorthents, Torripsamments, Ustorthents, Ustipsamments), Alfisols (Haplustalfs)	Begay, Anasazi, Shedado, Mido, Penistaja, Mespun, Pinavetes, Nalcase, Kydestea, Tonalea, Zyme, Vessilla, Doakum, Betonnnie, Arabrab, Evpark, Sojourn, Rizno, Aquima, Tekapo	Mesic / Ustic Aridic, some Aridic Ustic	8-13	120-170	18/43; 57/89	Utah juniper, pinyon pine, Wyoming big sagebrush, cliffrose, Mormon tea, desert holly, fourwing saltbush, blackbrush, galleta, blue and black gramas, sand dropseed, needleandthread, western wheatgrass, and Indian ricegrass.	(Navajo) and public land (State Trust, some I Shrubland, grassland, and evergreen woodlar Livestock grazing, hunting and gathering, fir and woodlot uses, wildlife habitat, coal mini dispersed low-density rural residential, small farming and gardening. Tribal land (Navajo, Industrial use of water for coal pipeline slurr
22r.	Mesa Highlands	731	Highest elevations of plateaus and mesas, with moderately dissected hillslopes and canyons, generally sloping to the southwest. Mostly intermittent and ephemeral streams.	6800-8210 / 300-1200	Quaternary alluvium, colluvium, and residual materials. Cretaceous sandstone with interbedded shale and coal; in the north, Jurassic sandstone.	Entisols (Ustorthents, Torriorthents), Alfisols (Haplustalfs)	Vessilla, Arabrab, Kydestea, Evpark, Zyme	Mesic / Aridic Ustic, Ustic	10-16	110-130	18/40; 57/86	Pinyon pine, Utah juniper, a few Ponderosa pine at high elevations, mountain-mahogany, Wyoming big sagebrush, antelope bitterbrush, Mormon tea, cliffrose, muttongrass, bottlebrush squirreltail, prairie junegrass, western wheatgrass, and blue grama.	concern for groundwater depletion and water question and water question and water question and some grassland and barren. Livestock grazing hunting and gathering, firewood and woodlot wildlife habitat, minor coal mining on bound with Ecoregion 22q. Tribal land (Navajo).
22s.	Hopi Buttes	379	Mesas, buttes, and intervening plains. Mostly ephemeral streams, some springs.	5800-6828 / 300-800	Quaternary alluvium, colluvium, and residual materials. Tertiary (Pliocene to Miocene) basalt deposited as lava flows, with some Pliocene to Miocene mudstone, siltstone, and sandstone.	Entisols (Torriorthents), Aridisols (Calciargids, Haplocalcids, Haplargids, Haplocambids)	Teesto, Flaco, Kinusta, Strych, Kinan, Begay, Penistaja	Mesic / Ustic Aridic	10-13	130-170	19/44; 57/90	Indian ricegrass, blue grama, black grama, galleta, winterfat, Stansbury cliffrose, Mormon tea, and widely spaced Utah juniper and pinyon pine.	Shrubland, some scattered evergreen woodla Livestock grazing, wildlife habitat, dispersed low-density rural residential. Tribal land (Na Hopi).
	Chinle Valley and Mesas	1863	Low tablelands with mesas, buttes, benches, alluvial fans, irregular plains, and valleys with river floodplains and terraces. Ephemeral and intermittent streams, few to no springs, and two small, shallow reservoirs.	5000-6400 / 200-700	Quaternary alluvium and residual materials, discontinuous eolian deposits, fluvial sand and gravel. Triassic mudstone and sandstone; Jurassic sandstone, mudstone, and siltstone.	Aridisols (Haplocambids, Calciargids, Haplocalcids), Entisols (Torripsamments, Torriorthents, Torrifluvents)	Sheppard, Monue, Begay, Denazar, Millett, Aneth, Jocity, Claysprings, Nakai, Naha, Gotho, Trail, Ives, Nazlini, Tezinie, Reef, Needle, Marcou	Mesic / Aridic	7-10	120-170	18/43; 60/93	Indian ricegrass, sand dropseed, galleta, needleandthread, black grama, fourwing saltbush, shadscale, broom snakeweed, rabbitbrush, and Mormon tea. On floodplains, some willow, cottonwood, and exotic tamarisk and Russian olive.	Shrubland, grassland, some barren land. Low density livestock grazing of cattle, sheep, go and horses; dispersed low-density rural resid Tribal land (Navajo).
	Kaibito/Moenkopi Sandy Plateaus	3079	Plateaus, mesas, and gently rolling uplands, with some narrow valleys and canyons. Ephemeral and intermittent streams, and several springs.	4800-6312 / 100-600	Quaternary eolian deposits, alluvial and fluvial sand and gravel, colluvium, and residual materials developed in sedimentary rocks. Jurassic sandstone and siltstone, Cretaceous sandstone and shale, some Triassic mudstone and sandstone in far south.	Entisols (Torripsamments, Torriorthents), Aridisols (Haplocambids, Haplocalcids)	Sheppard, Monue, Moffat, Nakai, Moenkopie, Needle, Nalcase, Begay, Mido, Mespun, Pensom, Tuba	Mesic / Aridic	7-10	120-180	20/45; 60/93	Galleta, Indian ricegrass, sand dropseed, spike dropseed, winterfat, snakeweed, yucca, and Mormon tea.	Shrubland and grassland, some barren land, and urban land cover at Tuba City. Low-density live: grazing of cattle, sheep, goats, and horses; dispellow-density rural residential. Tribal land (Na
22v.	Marble Platform	902	Low tablelands and rolling uplands, with mesas, buttes, benches, gentle alluvial fans, irregular plains and valleys. Ephemeral and intermittent streams, and few or no springs except near adjacent region cliffs.	3200-6520 / 100-600	Quaternary alluvium, mostly carbonate and some sedimentary residual materials. Permian limestone and sandstone, some Triassic mudstone and sandstone.	Aridisols (Haplocalcids, Haplargids, Petrocalcids, Haplocambids), Entisols (Torriorthents)	Pennell, Pagina, Kinan, Wahweap, Winona, Boysag, Seeg, Bison, Curob, Monue, Aneth, Hajisho, Shinume, Mellenthin, Progresso	Mesic / Aridic	7-12	140-200	23/45; 64/94	Galleta, Indian ricegrass, sand dropseed, blue grama, Mormon tea, broom snakeweed, winterfat, and fourwing saltbush.	Shrubland and grassland. Low-density livest grazing of cattle, sheep, goats, horses, and bit tourism and recreation, dispersed low-densit residential, wildlife habitat. Tribal land (Nava eastern portion, public land in western portion (USDA-FS-Kaibab National Forest, State Tru
22w.	Grand Canyon	1155	Deep, eroded canyons, mesas, buttes, benches, steep cliffs, talus slopes, colluvial fans, river gorge and floodplain. Mostly ephemeral and intermittent streams, with a few short perennial creeks plus the Colorado River. Numerous springs and seeps.	2000-8000 / 2000-4000	Quaternary alluvium, colluvium, and block-rubble colluvium, some fluvial sand and gravel deposits. Bare rock is common. Paleozoic (Permian to Cambrian) limestone, sandstone, siltstone, shale, dolomite, and conglomerate; Precambrian metasedimentary rocks such as phyllite, schist, quartzite, and argillite, and some Precambrian sedimentary and metavolcanic rocks.	Aridisols (Haplocalcids, Calciargids, Haplocambids, Haplargids, Petrocalcids), Entisols (Torriorthents, Torripsamments, Torrifluvents)	Rock outcrop, various rock outcrop-soil complexes, Splanod, Rizno, Hindu, Meriwhitica, Rolie, Havasupai	Mostly Thermic, some Mesic at high elevations / Aridic, Ustic Aridic	7-19	130-270	30/52; 67/97	Mostly desert scrub with creosotebush, white bursage, brittle brush, catclaw acacia, ocotillo, mariola, mesquite, fourwing saltbush, big sagebrush, blackbrush, and rabbitbrush. At higher elevations, pinyon pine, Utah and one seed juniper woodland, with big sagebrush, snakeweed, Mormon tea, agave, yucca, snakeweed, winterfat, Indian ricegrass, dropseed, and needlegrass. Hanging gardens, seeps, and springs often contain rare plants such as the white-flowering redbud tree, stream orchid, and McDougall's flaveria. In riparian areas, willows,	Shrubland and barren land, some evergreen woodland at upper elevations. Tourism and recreation, wildlife habitat. Public land (NPS Grand Canyon National Park) and tribal land (Havasupai, Hualapai).
22x.	Arizona Strip Plateaus	1749	Plateaus, mesas, lower mountain slopes, rolling uplands, and some narrow valleys and canyons. Ephemeral and intermittent streams, and some springs.	3400-7188 / 200-1800	Quaternary alluvium, mostly carbonate and some sedimentary residual materials, some lava fields. Permian limestone and sandstone, Holocene to Pliocene basalt, Triassic mudstone and sandstone.		Mellenthin, Tanbark, Radnik, Meriwhitica, Tassi, Childers, Rizno, Yumtheska, Lozinta, Thimble, Wodomont, Topocoba, Goesling, Kopie, Disterheff	Mesic / Ustic Aridic, some Aridic Ustic	11-14	130-190	23/48; 63/91	arrowweed, mesquite, catclaw acacia, and exotic tamarisk. Utah and one-seed junipers, pinyon pine, big sagebrush, blue grama, muttongrass, Indian ricegrass, needleandthread, galleta, and snakeweed.	Shrubland, evergreen woodland at higher elev some grassland. Livestock grazing, wildlife habitat, tourism and recreation, hunting, firev and woodlot uses. Mostly public land (BLM BLM and NPS–Grand Canyon-Parashant Na
22y.	Uinkaret/Aubrey Montane Conifer Forest	177	Upper plateau and mountain slopes. Ephemeral and intermittent streams, and a few springs.	6200-8028 / 400-1600	Quaternary volcanics, colluvium, and alluvium in north; mostly sedimentary residual materials and alluvium in south. Holocene, Pliocene, and Miocene volcanic basalt, and some Triassic mudstone and sandstone in the north; Permian limestone and sandstone and Oligocene to	In north, Mollisols (Argiustolls), Inceptisols (Haplustepts). In south, Alfisols (Paleustalfs, Haplustalfs), Mollisols (Calciustolls).	In north: Sponiker, Godding, Wutoma, Lozinta. In south: Tovar, Retsover, Pinntank, Pocomate, Toqui, Yumtheska, Theecan, Natank.	Mesic, some Frigid in north / Aridic Ustic, Ustic	13-18	110-150	22/43; 57/85	Ponderosa pine, pinyon pine, Utah juniper, Gambel oak, big sagebrush, Ross sedge, galleta, Mormon tea, bottlebrush squirreltail, blue grama, and Indian ricegrass.	hunting and gathering, wildlife habitat, touri recreation, livestock grazing. Public land in (BLM and NPS–Grand Canvon-Parashant N
	Chino/Coconino Grasslands and Shrub-Steppe	2672	Valleys, flats, and lower plateaus. Ephemeral and intermittent streams, and few or no springs.	4200-6300 / 50-300	Paleocene conglomerate, sandstone, and siltstone in the south. Quaternary alluvial and fluvial sand and gravel, some areas of residuum. Mostly Permian limestone and sandstone and minor areas of Tertiary sandstone and conglomerate on Coconino Plateau; Pliocene to Miocene conglomerate, sandstone, and basalt, and Paleozoic (Mississippian, Devonian, and Cambrian) sandstone,	Aridisols (Petrocalcids, Haplocalcids, Calciargids, Haplargids), Mollisols (Haplustolls, Argiustolls)	Plaintank, Rolie, Peachsprings, Curhollow, Winona, Havasupai, Poley, Truxton. Keeseha, Pastura, Rune, Partri, Lynx, Abra, Wineg, Lonti, Tusayan, Boysag	Mesic / Ustic Aridic	11-18	120-190	22/50; 59/92	A mix of semi-desert grasslands, semi-desert shrub-steppe, and sagebrush shrublands that include blue grama, black grama, bottlebrush squirreltail, needleandthread, Indian ricegrass, fourwing saltbush, winterfat, Bigelow sagebrush, and Mormon tea. A few scattered juniper at higher elevations.	Monument, NPS–Grand Canyon National Pa and tribal land in south (Hualapai). Shrubland and grassland. Ranching and lives grazing, wildlife habitat, some small areas of and pasture land in Chino Valley. Some urba rural residential in towns of Prescott Valley, Valley, and in smaller unincorporated towns as Seligman and Ash Fork. Some public land
 22aa.	Hualapai/ Coconino Woodlands	2154	Plateaus, mesas, mountains, cliffs, and rolling uplands, with some narrow valleys and canyons. Ephemeral and intermittent streams, and some springs.	4200-6760 / 200-1200	siltstone, mudstone, and shale in Chino, Aubrey, and Truxton valleys. Quaternary alluvium, colluvium, and carbonate and sedimentary residual materials. Paleozoic (Permian, Carboniferous, Devonian, and Cambrian) sandstone, siltstone, mudstone, limestone, and shale; Tertiary basalt, dacite, and rhyolite; some Tertiary (Oligocene to Paleocene) conglomerate, sandstone, and siltstone.	Inceptisols (Calciustepts), Alfisols (Haplustalfs, Paleustalfs), Mollisols (Calciustolls, Argiustolls), Entisols (Ustorthents, Torriorthents), Aridisols (Haplocalcids, Petrocalcids), Vertisols (Haplusterts)	Wodomont, Disterheff, Deama, Daze, Yumtheska, Natank, Topocoba, Luzena, Quartermaster, Coconino, Metuck, Milkweed, Meriwhitica, Winona, Tovar, Toqui, Thunderbird, Springerville, Aut, Ashfork, Cross, Hindu, Curhollow	Mesic / Aridic Ustic, some Aridic	11-23	120-190	22/49; 58/89	Utah juniper, pinyon pine, singleleaf pinyon, Stansbury cliffrose, galleta, blue grama, sideoats grama, western wheatgrass, black grama, needleandthread, bottlebrush squirreltail, muttongrass, fourwing saltbush, winterfat, and Mormon tea. Some turbinella oak in the west.	Trust, USDA-FS—Prescott and Kaibab Nation Forests) and tribal land (Hualapai, Havasupai Shrubland, evergreen woodland, and grasslar Ranching and livestock grazing, wildlife hab woodland uses such as firewood, hunting and gathering. Mostly public land (State Trust, B USDA-FS—Kaibab National Forest) and triba (Hualapai, Havasupai).
23.		ARI	IZONA/NEW MEX	XIC O	MOUNTAINS								
]	Level IV Ecoregions	Area (square	Physiography	Elevation / Local Relief	Geology Surficial and Bedrock	Order (Great Group)	Soils Common Soil Series	Temperature / Moisture	Precipitation Mean annual	Mean annual .	Mean Temperature January min/max;	Natural Vegetation	Land Cover and Land Use
	Madrean Lower Montane Woodlands	miles) 6215	High hills and low mountains, some deep canyons. Mostly moderate- to high-gradient intermittent streams with some perennial rivers and streams. Numerous springs.	(feet) 4200-7000 / 400-2000	Quaternary colluvium with valley-fill alluvium, block- rubble colluvium, and some residuum. Tertiary volcanic rocks including dacite, rhyolite, basalt, andesite, and ash-flow tuffs; Tertiary conglomerate, sandstone, mudstone, siltstone, and limestone; Paleozoic (Permian to Pennsylvanian) sandstone, shale, and limestone; Pracembring sandstone, limestone, shale, quarterite	(Haplocalcids, Haplargids)	Sponiker, Showlow, Thunderbird, Thimble, Dedal, Docdee, Anezul, Kuykendall, Beaumain, Cherrycow, Brolliar, Popcorn, Chevelon, Tortugas, Roundtop, Jacks, Barkerville, Cabezon, Abra, Faraway,	Regimes Mesic / Ustic, Aridic Ustic, Ustic Aridic	(inches) 14-27	(days)	July min/max (°F) 23/51; 57/88	Woodlands of Utah, alligator, or one-seed junipers, pinyon, Gray oak, Emory oak, and Gambel oak. At some middle elevations, a chaparral community beneath the trees with shrubs such as desert ceanothus, alderleaf mountainmahogany, turbinella oak, manzanitas, and catclaw mimosa. Other areas are grassy and park-like with mixed gramas and catclaw oaks or junipers. At highest elevations, a faw areas contested oaks or junipers.	Evergreen woodland, shrubland, small areas grassland. Some urban and residential land u around Prescott, Sedona, and Payson. Liveste grazing, recreation and tourism, wildlife habi hunting and gathering, firewood and woodlot some mineral mining. Mostly public land (Ut ES Prescott Coconing Toute and Angeles
23c.	Montane Conifer Forests	5622	High plateaus, open low mountains and high mountains with steep slopes, numerous canyons. Mostly moderate- to high-gradient intermittent and some perennial streams.	6000-9784 / 400-2500	Precambrian sandstone, limestone, shale, quartzite, diabase, conglomerate, granite, granodiorite, and metavolcanic rocks. Quaternary colluvium, block-rubble colluvium, residuum, and valley-fill alluvium. Permian limestone and sandstone; Quaternary basalt, andesite, dacite, and rhyolite; Tertiary (Pliocene, Miocene, and Oligocene)	Mollisols (Argiustolls, Haplustolls,	Gaddes, Moano, Lonti Broliar, Sizer, Telephone, Daze, Siesta, Sponseller, Overgaard, Elledge, McVickers, Soldier, Sanchez, Luna, Cambern, Ess. In Carrizo and Chuska	Frigid, Mesic / Ustic, Aridic Ustic	14-39	90-140	14/42; 49/81	scattered oaks or junipers. At highest elevations, a few areas of ponderosa pine and Madrean oaks. Ponderosa pine, Rocky Mountain juniper, one-seed juniper, or Utah juniper, some Douglas-fir, Southwestern white pine, white fir, and aspen at higher elevations. Blue spruce can occur in cool moist canyons. Understories include Gambel	suburban, and rural residential land uses arou Flagstaff, Williams, and Show Low. Timber
			Numerous springs and a few small lakes.		basalt, andesite, dacite, rhyolite, and some Tertiary sedimentary rocks; Cretaceous sandstone and shale. In the Chuska Mountains, Tertiary (Oligocene) sandstone, Mesozoic (Jurassic and Triassic) sandstone and mudstone, and small areas of Tertiary (Miocene and Oligocene) andesite and basaltic andesite. In the Carrizo Mountains, Tertiary to Cretaceous granitic rocks and Jurassic sandstone.		Mountains and Defiance Plateau: Ligai, Bigpaw, Zibetod, Pastorpeak, Arabrab, Todacheene, Kunz, Tuntsa, Jacks, Verite, Manuelito. On Kaibab Plateau: Kanabownits, Kippers, Elledge. On Coconino Rim: Pocomate, Pinntank, Retsover, Toqui, Yumtheska, Tovar.					oak, mountain-mahogany, Arizona fescue, blue grama, sideoats grama, pine dropseed, mountain muhly, junegrass, bottlebrush squirreltail, and in the north, some mountain big sagebrush.	production, livestock grazing, wildlife habita hunting, and recreation and tourism. Mostly
23d.	Arizona/New Mexico Subalpine		High mountains with moderate to steep slopes. Some high-gradient perennial and intermittent streams with boulder, cobble, and bedrock substrates.	8500-12633 / 600-3000	Quaternary colluvium, block-rubble colluvium, alluvium, and residuum. On Kaibab Plateau, Permian limestone and sandstone; on San Francisco Peaks, Holocene to Pliocene volcanic basalt, andesite, dacite,	Entisols (Cryorthents, Ustorthents), Mollisols (Argiustolls), Alfisols (Cryoboralfs, Paleustalfs), Inceptisols (Dystrochrepts, Cryochrepts)	In White Mountains: Baldy, Gordo, Ess, Sizer. On Kaibab Plateau:	Cryic, Frigid / Udic Ustic, Ustic, Aridic Ustic	26-50	60-90	10/38; 43/71	Engelmann spruce, corkbark fir, blue spruce, white fir, and aspen, with some Douglas-fir at lower elevations. In the understory, dwarf juniper, snowberry, currant, willow, mountain muhly, mountain brome, mountain junegrass.	Evergreen forest and some deciduous forest. Recreation, wildlife habitat, some designated wilderness. All public land (USDA-FS-Kaib Coconino, and Apache-Sitgreaves National
	Forests				and rhyolite; on White Mountains, Pliocene to Miocene rhyolite, dacite, and andesite, Holocene to Pliocene basalt.							At highest elevations, some alpine tundra herbs, grasses, sedges, lichens, ferns, and mosses.	Forests; NPS–Grand Canyon National Park) tribal land (Fort Apache).

			XICO	MOUNTAINS (contin	ued)	0.41			Ci.		NY / NYY · ·	1 10 :-
Level IV Ecoregion	Area	Physiography	Elevation /	Geology Surficial and Bedrock	Order (Great Group)	Soils Common Soil Series				Mean Temperature	Natural Vegetation	Land Cover and Land U
h Laway Magallan	(square miles)	High hills and low mountains, some deep	Local Relief (feet) Mostly	Quaternary colluvium, block-rubble colluvium,	Mollisols (Argiustolls, Haplustolls),	Beaumain, Cherrycow, Romero,	Moisture Regimes Thermic,	Mean annual (inches)	Mean annual (days)	January min/max; July min/max (°F)	A mix of desert scrub, semi-desert grasslands, and chaparral	Shrubland, some sparse evergreen woodla
h. Lower Mogollon Transition	3311	canyons and a few broader valleys. Mostly moderate- to high-gradient ephemeral and	3000-5000, maximum	valley-fill alluvium, and residuum. Tertiary (Miocene) basalt; Precambrian granodiorite, granite, greenstone,	Entisols (Ustorthents, Torriorthents), Aridisols (Paleargids, Haplargids,	Cammerman, Caralampi, Barkerville, Graham, Retriever, Venezia, Moano,	, Mesic / Aridic Ustic,	12-23	100-240	65/95	communities. Semi-desert grasslands contain tobosa, black grama, and threeawns, with a mix of scattered agaves.	higher elevations, a few small areas of gra Some urban and residential land uses arou
		intermittent streams with some perennial rivers and streams. Numerous springs.	6400 / 400-2000	and metavolcanic rock; Tertiary (Pliocene, Miocene, Oligocene) conglomerate and sandstone; Tertiary (Miocene to Oligocene) dacite and rhyolite.	Haplocambids, Calciargids, Haplocalcids), Alfisols (Haplustalfs)	Lonti, Balon, Arp, Luzena, Faraway, Gonzales, Penthouse, Nodman, Valena, Tombstone, Lampshire	Ustic Aridic				yuccas, sotol, opuntia, snakeweed, and mesquite. Chaparral areas include turbinella oak, mountain-mahogany, manzanita, shrubby buckwheat, desert ceanothus, cliffrose, deerbrush,	Cottonwood, Camp Verde, and Globe. Sm of hay and pasture land along the Verde R Livestock grazing, recreation and tourism.
											skunkbush sumac, and silktassel, with scattered desert shrubs such as canotia, catclaw acacia, and jojoba. In open chaparral stands or after burns, grasses include sideoats grama, blue	habitat, some mineral mining. Mostly publand (USDA-FS-Prescott, Coconino, and National Forests; State Trust, BLM) and to
											grama, plains lovegrass, and red brome. Some juniper woodland occurs at higher elevations, typically with one-seed juniper to the east and more Utah juniper to the west and north.	(San Carlos, Fort Apache).
i. Montane and Subalpine	132	High mountain basins, valleys, and flats. Intermittent and perennial streams, with some springs and wetlands. A few small lakes in	Mostly 7500-9600, minimum	Quaternary colluvium, alluvium, and residuum. Permian limestone and sandstone on Kaibab Plateau; Holocene to Pliocene volcanic basalt, andesite, dacite,	Mollisols (Argiustolls)	Sizer, Tatiyee, Ess, Gordo, Hereford	Frigid / Ustic, some Aridic Ustic	23-35	70-110	12/40; 48/76	Arizona fescue, Parry's oatgrass, mountain muhly, Idaho fescue, pine dropseed, prairie junegrass, various sedges, and exotic Kentucky bluegrass, with some minor areas of	Grasslands, minor areas of evergreen or de forest, some herbaceous wetlands. Wildlif recreation, some livestock grazing. All in
Grasslands		White Mountains.	6750 in Garland Prairie east	and rhyolite on San Francisco Peaks and White Mountains.			Andie Ostie				quaking aspen, white fir, Douglas-fir, and ponderosa pine.	land (USDA-FS–Kaibab, Coconino, and A Sitgreaves National Forests; NPS–Grand (National Park) and tribal land (Fort Apach
			of Williams / 50-200									reactional Fairs) and tribal fails (Fort Apaci
j. Northern Woodlands and	1578	High plateaus and open low mountains, numerous canyons. Mostly moderate- to high- gradient ephemeral and intermittent streams;	5900-7800 / 300-1500	Quaternary colluvium, block-rubble colluvium, valley-fill alluvium, and residuum. Permian limestone and sandstone. In the Carrizo Mountains, Triassic	Mollisols (Calciustolls), Alfisols (Haplustalfs, Paleustalfs), Inceptisols (Calciustepts, Haplustepts), Entisols	Yumtheska, Houserock, Natank, Disterheff, Topocoba, and Wodomont. In the northeast: Tsezhin,	Mesic / Aridic Ustic, Ustic	10-18	110-160	17/42; 55/85	Utah, one-seed, and Rocky Mountain junipers, singleleaf and two-needle pinyon, Stansbury cliffrose, Wyoming big sagebrush, black sagebrush, blue grama, muttongrass. Some	Evergreen woodland, shrubland, and some grassland. Wildlife habitat, recreation and hunting and gathering, firewood and wood
Sagebrush		a few perennial streams originating from higher elevations cross the ecoregion in the northeast. Some springs.		mudstone, sandstone, and conglomerate, Jurassic sandstone, Permian to Pennsylvanian sandstone, siltstone, and limestone.	(Ustorthents)	Chazner, Katzine, Nizhoni, Arabrab, Plumasano, Evpark, Sojourn, Manuelito, Verite, Vessila.					ponderosa pine at higher elevations.	livestock grazing. Mostly public land (US FS-Kaibab National Forest, NPS-Grand National Park) and tribal land (Navajo).
k. Sunset Crater Volcanics	122	Hills, plateaus, cinder cones, lava flows. Mostly lacks surface water.	5600-8039 / 400-1000	Holocene basaltic lavas and cinders, with eruptions 900-1000 years ago. Pleistocene basaltic volcanic rocks	Aridisols (Haplocambids), Mollisols (Durustolls)	Wukoki, Wupatki, Lomaki, Nalaki. Some cinder cones and lava flows mostly devoid of soils.	Mesic / Ustic Aridic, Aridic Ustic	13-19	120-180	15/44; 51/86	Stunted and gnarled ponderosa pine, pinyon pine, Utah juniper, and some aspen. Isolated vegetation islands occur. Understories include apache plume, cliffrose, skunkbush	Evergreen forest and woodland, shrubland Recreation and tourism, wildlife habitat. I public land (USDA-FS-Coconino Nation
				Tooks.		mostly devote of sons.	Titule Ostie				sumac, rabbitbrush, Mormon tea, blue grama, galleta, black grama, threeawn, and winterfat. Some cinder-endemic species occur such as Sunset Crater beardtongue and cinder phacelia.	NPS-Sunset Crater Volcano National Mo
l. Mogollon	1627	Plateau escarpment with steep slopes, high hills and low mountains, some deep	5400-7700 / 500-2000	Quaternary colluvium, block-rubble colluvium, and valley-fill alluvium. Permian to Pennsylvanian	Mollisols (Argiustolls, Haplustolls), Alfisols (Paleustalfs, Haplustalfs),	Roundtop, Anezul, Dedal, Elledge, Casto, Hogris, Barkerville, Dandrea,	Mesic, some Frigid /	13-37	120-180	21/46; 56/84	Ponderosa pine, some Chihuahuan pine, alligator juniper, pinyon pine, evergreen oaks such as silverleaf oak, netleaf	Evergreen forest and woodland, some shruand grassland. Recreation and tourism, wi
Transition Conifer Forests		canyons. Mostly moderate- to high-gradient intermittent and perennial streams. Numerous springs.		sandstone, siltstone, shale, and limestone; Mississippian to Devonian sandstone, shale, limestone, dolostone, and siltstone; Oligocene to Paleocene conglomerate	Entisols (Ustorthents)	Faraway, Far	Ustic, Aridic Ustic				oak, and Emory oak in the southeastern areas, mountain- mahogany, ceanothus, manzanita, blue grama, sideoats grama, and muttongrass. Often has a denser understory of	habitat, ranching and livestock grazing, for and woodlot uses, mineral mining, and hu gathering. Mostly public land (USDA-FS-
				and sandstone; in eastern portion, mostly Miocene to Oligocene dacite, rhyolite, basalt, and andesite.							shrubs and oaks than in Ecoregion 23c to the north.	Tonto, and Apache-Sitgreaves National Fore State Trust) and tribal land (San Carlos, For
4. Level IV Ecoregion		IHUAHUAN DESI Physiography	LKIS	Geology		Soils			Climate	<u>.</u>	Natural Vegetation	Land Cover and Land U
	Area (square	- Injurgraphy	Elevation / Local Relief	Surficial and Bedrock	Order (Great Group)	Common Soil Series	Moisture	Mean annual	Frost Free Mean annual	Mean Temperature January min/max;	j	U Solet and Dand U
a. Chihuahuan	miles)	Deep depressions or grabens filled with	(feet) 2600-3580 /	Quaternary and some late Tertiary alluvium and	Entisols (Torrifluvents), Aridisols	Pima, Gila, Guest, Grabe, Maricopa,	Regimes Thermic /	(inches)		July min/max (°F) 29/61;	Desert scrub with creosotebush, tarbush, fourwing saltbush,	Shrubland with cropland and pasture adja
Basins and Playas		sediment to form flat to rolling basins. Broad valleys with alluvial fans, dissected fan terraces, valley slopes, and in Arizona,	50-300	erosional materials from surrounding mountains, including unconsolidated basin deposits of silt, sand, and gravel. Includes piedmont and fan alluvium, river	(Calciargids, Petrocalcids)	Agua, Comoro, Glendale, Anthony, Pinaleno, Cave, Continental	Aridic, Ustic Aridic			68/99 [°]	a few small or low-growing cacti such as pricklypear, some mesquite and acacia. Sparse, scattered grasses include black grama, bush muhly, alkali sacaton, sand dropseed, and	to Gila River. Cropland is mostly cotton, and corn. Ranching and livestock grazing residential. Some public land (BLM, Stat
		the Gila River floodplain. Ephemeral and intermittent streams; a few scattered springs.		alluvium, and eolian deposits. Pliocene to Miocene sandstone and conglomerate.							Arizona cottontop. Along the Gila River, some cottonwood, Arizona sycamore, and willow, as well as exotic tamarisk.	
c. Low Mountains and Bajadas	527	Low-elevation mountains, hills, alluvial fans, dissected fan terraces, valley slopes, shallow canyons, Gila River floodplain. Ephemeral	3000-5460 / 200-1500	Quaternary colluvium with valley-fill alluvium, piedmont and fan alluvium, some block-rubble colluvium. Pliocene to Miocene sandstone and	Aridisols (Calciargids, Haplargids, Petroargids, Argidurids), Mollisols (Argiustolls, Durustolls, Paleustolls),	On slopes: Limpia, Wampoo, Graham, Signal, Pinaleno, Continental, Tres Hermanos, Tapco,	Thermic / Aridic, Ustic Aridic	12-14	170-240	27/59; 64/96	Mostly Chihuahuan desert scrub with some semi-desert grassland and a few scattered junipers at higher elevations. Sotol, yucca, ocotillo, pricklypear, mesquite, catclaw acacia, and a sparse cover of black grama, bush muhly, and tobosa.	Shrubland, some pasture and cropland ald River. Ranching and livestock grazing, w habitat, some rural residential. Small area
		and intermittent streams; a few scattered springs.		conglomerate, Miocene to Oligocene volcanic rocks.	Entisols (Torrifluvents)	Peloncillo, rock outcrop. In valley bottom: Gila, Pima, Glendale, Guest.					and a sparse cover of black grama, bush muhly, and tobosa. Along the Gila River, some cottonwood, Arizona sycamore, and willow, as well as exotic tamarisk.	cropland is mostly hay, corn, and cotton. public land (BLM, State Trust).
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9.		DREAN ARCHIP	ELAG		T			<u> </u>			T	T -
Level IV Ecoregio	Area	Physiography	Elevation /	Geology Surficial and Bedrock	Order (Great Group)	Soils Common Soil Series				Mean Temperature	Natural Vegetation	Land Cover and Land U
	(square miles)	December 11 11 11 11 11 11	Local Relief (feet)		.,		Moisture Regimes	Mean annual (inches)	Mean annual (days)	January min/max; July min/max (°F)		Charles I I I I I I I I I I I I I I I I I I I
a. Apachian Valleys and Low Hills	6085	Broad, level to rolling valley plains, alluvial fans, and some low hills. Surface water is scarce, with mostly ephemeral and intermittent streams. Parts of the Sen Padro	maximum	Quaternary alluvium and erosional materials from surrounding mountains, including unconsolidated basin deposits of silt, sand, and gravel. Includes piedmont and	Haplocalcids, Calcigypsids,	Forrest, White House, Caralampi, Bernardino, Diaspar, Sasabe, Hathaway, Vana, Libby, Bella,	Thermic / Ustic Aridic, Aridic,	11-19, strong monsoonal	180-240	31/60; 66/95	Desert scrub and semi-desert grassland. Creosotebush, Mormon tea, mimosa, sotol, yucca, ocotillo, cacti, and agave, with areas of grasses that included black grama,	Shrubland and grassland. Ranching and li grazing, wildlife habitat, tourism and rect Some cropland and hay pasture land. Smand recidential land was accompillations.
		intermittent streams. Parts of the San Pedro River are perennial. Groundwater levels are declining.		fan alluvium, and fluvial and eolian deposits. Pliocene to Miocene conglomerate and sandstone, some Miocene to Oligocene lavas and tuffs.	Haplogypsids, Haplocambids, Argidurids), Mollisols (Calciustolls), Vertisols (Gypsitorrerts), Entisols	Major, Courtland, Crystalgyp, Ugyp, Tombstone, Deloro, Comoro, Tubac, Mallet, Eba, Bucklebar, Artesia	Aridic Ustic	maximums July to			tobosa, sideoats grama, burro grass, cane beardgrass, plains lovegrass, hairy grama, vine mesquite, curly mesquite, and bush muhly. Shrub and cacti encroachment and exotic	and residential land uses, especially near Sierra Vista, Willcox, Douglas, and Benso public land (State Trust, BLM, USFWS)
h T. ** *	2055		600		(Torrifluvents)		TILL	September	160.000	20/57	species have altered historical grassland areas. Mesquite encroachment has been significant in some areas.	military land (Fort Huachuca).
b. Lower Madrean Woodlands	3933	Low- to mid-elevation mountain ridges, slopes, and hills. Mostly ephemeral and intermittent streams. Some springs occur.	Mostly 4000-7100, maximum 7975 /	Quaternary colluvium, valley-fill alluvium, piedmont and fan alluvium, block-rubble colluvium, and residuum. Tertiary (Miocene to Oligocene) volcanic rocks of dacite, rhyolite, basalt, and andesite; Tertiary	Aridisols (Haplargids), Entisols (Torriorthents, Ustorthents), Mollisols (Haplustolls), Inceptisols (Haplustepts), Alfisols (Haplustalfs)	Cortaro, Chiricahua, Graham, Faraway, Spudrock, Far, Pantak, Lampshire, Romero, Mabray, Oracle, Deloro, Cellar, Gaddes,	Thermic, Mesic / Ustic Aridic,	13-28, strong monsoonal	160-220	30/56; 61/90	Madrean encinal or evergreen oak woodlands and Madrean juniper-pinyon woodland. Emory, silverleaf, netleaf, Tourney, and Arizona white oaks, some pinyon (including border pinyon and Meyican pinyon) alligator juniper	Woodlands and shrublands. Livestock grawildlife habitat, mining, recreation. Most land (USDA-FS—Coronado National Fore State Trust) and some tribal land in west
			7975 / 800-3000	to Cretaceous muscovite-bearing granitic rocks; Precambrian schist, gneiss, granite, and granodiorite;		Barkerville, Casto, Canelo, Budlamp, Collarbutton, Beaumain, Magoffin,	Aridic, Aridic Ustic, Ustic	influence, maximums July to			border pinyon and Mexican pinyon), alligator juniper, one-seed juniper, Arizona madrone, New Mexico locust, and chaparral species. Understory grasses of blue grama, sideoats grama, hairy grama, little bluestem, and plains	State Trust) and some tribal land in west (O'odham).
				Miocene to Oligocene granodiorite and granite; Jurassic sandstone, conglomerate, rhyolite, and metavolcanic rock; Jurassic granodiorite and granite; Pliocene to		Woodcutter, Cherrycow, Kuykendall, Huachuca, Turquoise		September			sideoats grama, hairy grama, little bluestem, and plains lovegrass. Some cacti and agave. Riparian areas with cottonwood, sycamore, and willow.	
c. Madrean Pine-	515	Mostly ephemeral and intermittent streams,	Mostly 6500-10718,	Miocene conglomerate and sandstone. Quaternary colluvium with valley-fill alluvium, block-rubble colluvium, some residuum. Precambrian	Inceptisols (Haplustepts), Entisols (Ustorthents), Mollisols (Haplustolls,	Spudrock, Boriana, Lemmon, Far, Hogris, Huachuca, possibly Mirabal	Mesic, Frigid /	21-42, strong	120-190	24/47; 53/80	Pine-oak, pine, montane fir, and mixed conifer forests. Ponderosa pine, southwestern white pine, Apache pine, and	Evergreen forest and woodland with some of or mixed forest, a few small areas of shru
Oak and Mixed Conifer Forests		with a few short perennial reaches.	lower in some canyons /	schist and gneiss, as well as some granite and granodiorite; Miocene to Oligocene volcanic rocks of dacite, rhyolite, basalt, and andesite; Tertiary to	Argiustolls), Alfisols (Haplustalfs)	and Baldy (soil series not mapped in all areas)	Ustic, Udic Ustic	monsoonal influence, maximums		22,00	Chihuahuan pine, along with some Douglas-fir. Arizona white oak, Emory oak, silverleaf oak, Gambel oak, and alligator juniper.	Wildlife habitat, designated wilderness, f recreation and tourism, space telescope of Forest products such as sawlogs and fuely
				Cretaceous muscovite-bearing granitic rocks; Jurassic rhyolite and metavolcanic rock; Jurassic sandstone and conglomerate.				July to September				mostly by-products of forest restoration of reduction strategies. Mostly public land (FS-Coronado National Forest, NPS-Saguar
d. Willcox Playa	62	Broad, nearly level alluvial flat and playa lake		Holocene playa alluvium, shoreline alluvial and eolian	Aridisols (Natrargids, Natridurids,	Mostly mapped as water, with	Thermic /	12-13,	190-210	28/59; 65/94	Vegetation is mostly absent but some scattered, salt-tolerant	Park) and some military land (Fort Huach Barren, some minor areas of shrubland or
-		plain. Intermittent saline lakes occur.	10-20	deposits.	Haplodurids), Entisols (Torriorthents)	hummocky Torriorthents at edges. Some Crot, Stewart, and Duncan on the margins.	Aridic, Ustic Aridic	strong monsoonal influence,		65/94	plants occur, such as desert saltgrass, saltbush, alkali sacaton, and alkali lovegrass.	grassland. Wildlife habitat, military bomb range. Military land, some public land (St BLM).
								maximums July to September				
e. Madrean Basin Grasslands	3024	Upper portions of level to rolling valley plains, sloping alluvial fans, and some low hills. Surface water is scarce, with	100-500, some hills to	Quaternary alluvium and erosional materials from surrounding mountains, including unconsolidated basin deposits of silt, sand, and gravel. Includes piedmont and	Aridisols (Haplargids, Calciargids, Haplocalcids, Paleargids, Petrocalcids, Haplocambids),	White House, Caralampi, Signal, Bernardino, Deloro, Comoro, Sasabe, Andrada, Chiricahua, Lampshire,	Thermic / Ustic Aridic, Aridic Ustic		180-240	31/59; 64/92	Semi-desert grassland with black grama, tobosa, sideoats grama, burro grass, cane beardgrass, plains lovegrass, hairy grama, vine mesquite, curly mesquite, bush muhly, wolftail,	Grassland and shrubland. Ranching and li grazing, wildlife habitat, tourism and recr Some public land (State Trust, BLM).
		mostly ephemeral and intermittent streams. Groundwater levels are declining.	1000	fan alluvium, and eolian deposits. Pliocene to Miocene conglomerate and sandstone; Holocene to Pliocene basalt; Miocene to Oligocene lavas and tuffs; Paleozoic	Mollisols (Paleustolls, Calciustolls, Argiustolls), Entisols (Torriorthents), Alfisols (Paleustalfs), Vertisols	Graham, Hathaway, Tombstone, Stronghold, Mabray, Mule, Kimrose, Cherrycow, Terrarossa, Blacktail,		influence, maximums July to			and other grasses. Shrubs and succulents such as mesquite, burroweed, yucca, agave, sotol, Mormon tea, mimosa, and ocotillo are a minor component of the grasslands. Some	(2.300, 2.300, 2.300).
				limestone, sandstone, and shale; Miocene to Oligocene conglomerate and sandstone.	(Haplotorrerts, Calcitorrerts)	Carbine, Eloma, Eskiminzin, Signal, Tubac, Beaumain, Mallet, Eba, Elgin, Bonita, Forrest, Outlaw, Zapolote	,	September			shrub and cacti encroachment has occurred, but less than in Ecoregion 79a.	
						, , ,						
1.		NORAN BASIN A	ND RA			Soils		Γ	Cu	<u>, </u>	N1-41 X7 / /*	Land Co. 17
Level IV Ecoregion	Area	Physiography -	Elevation / Local Relief	Geology Surficial and Bedrock	Order (Great Group)	Soils Common Soil Series		Precipitation		Mean Temperature	Natural Vegetation	Land Cover and Land U
d. Sand Hills/	(square miles)	Level to undulating plains with sand dunes	Local Relief (feet) 500-1400 /	Quaternary eolian deposits of sand and silt. Some	Entisols (Torripsamments), Aridisols	Rositas, Superstition	Moisture Regimes Hyperthermic /	Mean annual (inches)	Mean annual (days) 300-350	January min/max; July min/max (°F)	Vegetation is typically sparse. Scattered perennials include	Barren land and shrubland. Wildlife habi
d. Sand Hills/ Sand Dunes	303	Level to undulating plains with sand dunes and sand flats.	500-1400 / 50-180	Quaternary eolian deposits of sand and silf. Some Pliocene to Miocene conglomerate and sandstone in the Cactus Plains area.		толия, эпретяннон	Aridic Aridic	2-0	500-330	38/67; 78/107	Vegetation is typically sparse. Scattered perennials include longleaf ephedra, white bursage, desert buckwheat, big galleta, California threeawn, and dune peabush, with some creosotebush in swales and flats. Dune crests often have	recreation, some designated wilderness, r Mostly public land (BLM, State Trust), n land (Barry M. Goldwater Air Force Range
											different sand-adapted plant species than in the more stable, lower swales. Many ephemeral annuals and wildflowers can	land (Barry M. Goldwater Air Force Rang some tribal land (Colorado River).
											be abundant after high winter-spring rainfall. Sand verbena, dunes evening primrose, Arizona lupine, and desert marigold are typical spring wildflowers.	
g. Lower Colorado/ Lower Gila River	849	Floodplains, terraces, alluvial valleys, and adjacent alluvial fans along the Colorado and Lower Gila rivers.	70-1400 / 10-500	Holocene and Pleistocene alluvium of sand and gravel in river channels, and sand, silt, and clay on floodplains; a few areas of colluvium. A few areas of Miocene to	Entisols (Torrifluvents, Torripsamments, Torriorthents), Aridisols (Haplocalcids, Calciargids)	Gilman, Glenbar, Lagunita, Vint, Kofa, Cibola, Agualt. In rocky	Hyperthermic / Aridic	3-5	300-360	40/68; 79/106	Vegetation removed in many areas for agriculture and urban uses. Some creosotebush, white bursage, desert saltbush, and mesquite. Riparian areas now invaded by tamarisk were	Cropland, hay and pasture land, shrubland and herbaceous wetlands, and open water and residential land near Lake Havasu Cit
Valleys				Oligocene volcanic, sedimentary, and granitic rocks; Jurassic granitic and metavolcanic rocks; Precambrian granite, granodiorite, schist, and gneiss.	(areas and terraces to the north: Gunsight, Coolidge, Chuckawalla, Hyder, Quilotosa.					once mostly willow and cottonwood.	Yuma, and Somerton areas. Agricultural l is mostly wheat, barley, hay and alfalfa, c lettuce, citrus, broccoli, and melons. Som
				Carrier, General and Envisor		, ,, <u>Q</u>						land (USFWS—Havasu, Bill Williams Riv Cibola, and Imperial National Wildlife R BLM; State Trust; State Parks) and tribal
. Central Sonoran/	2656	Hills and low mountains, some alluvial fans.		Quaternary alluvium, colluvium, and block-rubble	Aridisols (Haplocambids,	Laposa, Schenco, Lomitas,	Hyperthermic /	4-7	270-330	41/66;	Sonoran creosotebush scrub transitioning into succulent	(Colorado River, Fort Yuma, and Cocopa Shrubland and barren land. Military, wildl
Colorado Desert Mountains		Mostly ephemeral streams, a few springs.	400-2000	colluvium, some residuum. Tertiary (Miocene to Oligocene) volcanic rocks of dacite, rhyolite, basalt, and andesite; early Tertiary to late Cretaceous granitic	Petrocalcids, Haplodurids, Haplargids), Entisols (Torriorthents)	Quilotosa, Hyder, Guvo, Cherioni, Gachado, Cipriano	Aridic			78/104	scrub with numerous ocotillo and cacti. Čreosotebush, white bursage, brittlebush, ocotillo, teddy bear and staghorn cholla, range ratany, barrel cactus, beavertail cactus, and	recreation, some ranching and low-density grazing. Mostly public land (BLM, USF) and Cabeza Prieta National Wildlife Refu
				rocks; Precambrian granite, schist, and gneiss; Jurassic granite, granodiorite, and metavolcanic rocks; Cretaceous to Jurassic sandstone and conglomerate.							littleleaf paloverde. Shrub and cacti density typically sparser than in Ecoregion 81k to the east and north.	NPS-Organ Pipe Cactus National Monum Trust), military land (Barry M. Goldwate Force Range, Yuma Proving Ground), an
j. Central Sonoran/	8920	Flat to gently sloping basins and valleys composed of bajadas, alluvial fans, plains,	100-2000 / 50-400	Quaternary alluvium and eolian deposits. Small, scattered hills are mostly Tertiary volcanic rocks or	Aridisols (Haplocalcids, Haplosalids, Calciargids, Haplocambids), Entisols	Denure, Dateland, Gunsight, Momoli, Rillito, Laveen, Valencia,	Hyperthermic / Aridic	3-7	280-350	39/67; 77/106	Sparse desert scrub of mostly creosotebush and white bursage. On alluvial fans and coarser soils, ocotillo,	land (Tohono O'odham, Colorado River) Shrubland and barren land. Minor cropla Gila and Colorado rivers and in Harquah
Colorado Desert Basins		eroded washes, stream terraces, and floodplains. A few small, isolated hills or buttes occur. Surface water is scarce, with		Precambrian granitic and metamorphic rocks.	(Torripsamments, Torrifluvents)	Why, Antho, Gilman, Harqua, Mohall, Wellton, Cristobal, Ligurta, Rosalitas, Superstition				, , , 100	brittlebush, and cholla. Shrub density is low to moderate, with shrub spacing from several feet to tens of feet. On finer-textured, poorly drained soils with high alkalinity	Military, wildlife habitat, recreation, some and low-density livestock grazing, minor urural residential uses in Yuma, Gila Bend
		mostly ephemeral streams.				J, 2.00unuu, bupeisuuon					and salinity, desert saltbush scrub with allscale, fourwing saltbush, mesquite, and bush seepweed. In washes and ephemeral streams, mesquite and exotic tamarisk mixed	Quartzite areas. Mostly public land (BLM, Kofa and Cabeza Prieta National Wildlife NPS–Organ Pipe Cactus National Monun
											with creosotebush. Along some dry-wash channels, microphyll woodland habitat with blue paloverde, ironwood, smoke tree, or desert willow.	State Trust), military land (Barry M. Gold Force Range, Yuma Proving Ground), and land (Tohono O'odham, Colorado River).
k. Arizona Upland/	9105	Hills and low mountains, some alluvial fans. Mostly ephemeral and some intermittent	Mostly 1500-4500,	Quaternary alluvium, colluvium, and block-rubble colluvium; some residuum. Tertiary (Miocene to	Aridisols (Haplargids, Haplocambids, Haplodurids,		Thermic, some Hyperthermic /	7-20	210-290	40/63; 74/100	Desert scrub with saguaro, foothill paloverde, creosotebush, triangle bursage, limberbush, wolfberry, bush muhly,	Shrubland. Wildlife habitat, recreation an designated wilderness, military, some ran
Eastern Sonoran Mountains		streams, some springs.	minimum 800, maximum	Oligocene) volcanic rocks of dacite, rhyolite, basalt, and andesite; Tertiary to Precambrian gneissic rocks; Jurassic granitic rocks, as well as sandstone and	Petrocalcids, Haplocalcids), Entisols (Torriorthents)	Schenco, Quilotosa, Hyder, Gachado, Cherioni, Vaiva, Lomitas, Cipriano, Garzona,	Aridic			00	threeawns, pricklypear, cholla, ocotillo, organpipe cactus, ironwood, and globe mallow.	low-density livestock grazing. Mostly pul (BLM, BLM–Sonoran Desert and Ironwo National Monuments, USFWS–Kofa and
			5681 /	conglomerate; Tertiary to Cretaceous volcanic rocks; Precambrian granite, granodiorite, phyllite, schist, and quartzite; Pliocene to Miocene sandstone and		Anklam, Delthorny, Bosa, Caracara, Granolite, Pantano						Prieta National Wildlife Refuges, NPS-O Pipe Cactus National Monument and Sag National Park, State Trust), tribal land (To
				conglomerate.								O'odham, San Carlos, Gila River, Salt Riv Fort McDowell), and military land (Barry Goldwater Air Force Range).
l. Arizona Upland/	9187	Flat to gently sloping basins and valleys composed of bajadas, alluvial fans, plains,	Mostly 1500-3600,	Quaternary alluvium and eolian deposits. Some areas of Pliocene to Miocene conglomerate and sandstone in the	Aridisols (Haplocalcids, Haplocambids, Calciargids,	Cipriano, Ajo, Momoli, Gilman,	Hyperthermic, Thermic /	7-13	220-300	36/66; 72/102	In plains and lower bajadas, creosotebush and bursage similar to Ecoregion 81j, with more thornscrub elements	Shrubland, some grassland, and barren lar suburban, and residential land use in Tucson/
Eastern Sonoran Basins		eroded washes, stream terraces, and floodplains. A few small isolated hills or buttes occur. Surface water is scarce, with	minimum 900 in northwest /	north. Small, scattered hills are mostly Tertiary volcanic rocks or Precambrian granitic and metamorphic rocks.		Mohall, Tucson, Sahuarita, Hayhook, Tubac, Pinaleno, Glendale, Mohave, Anthony,	Aridic			. –	of the Sonoran Arizona Upland. Upper bajadas have some similarities with vegetation communities of the mountain slopes of Ecoregion 81k, with more saguaro, foothills	Valley area and in eastern margins of greate metropolitan area. Small areas of pasture, cropland in McMullen Valley. Ranching a
		mostly ephemeral and some intermittent streams.	50-400			Stagecoach, Palos Verdes, Pinaleno, Nahda, Artesia, Guest, Continental, Cave, Beardsley,					paloverde, ironwood, triangle-leaf bursage, ocotillo, mesquite, acacias, a variety of opuntias, and some bush muhly. Joshua trees occur northwest of Wickenburg, a relict	density livestock grazing, wildlife habitat, Mostly public land (BLM, BLM–Sonoran I Ironwood Forest National Monuments, NF
				l .		Continuina. Cave. Transcrip			. '		mulity. Joshua trees occur northwest of with kerning a few	I HOHWOOD I OFOST THERE WAS A STATE OF THE S
						Carefree, Ebon, Pinamt, Contine					population of this Mojavean species.	Pipe Cactus National Monument, State Tribal land (Tohono O'odham, San Carlos
lm. Sonoran Lava Fields	302	Volcanic cinder plains, lava flows, and low volcanic cones.	400-1076 / 50-300	Holocene to Pliocene basaltic lava, alluvial and some eolian sand deposits.	Aridisols (Haplodurids, Haplocalcids), Entisols (Torriorthents)	Carefree, Ebon, Pinamt, Contine	Hyperthermic / Aridic	4-6	290-330	39/68; 77/106		Pipe Cactus National Monument, State Tr tribal land (Tohono O'odham, San Carlos, River, Salt River, and Fort McDowell). Shrubland, some barren land. Wildlife habitat, m recreation. Mostly public land (BLM, USFW Prieta National Wildlife Refuge, and State T

SOURCES (in part):

Intermediate

810. Middle Gila/Salt

River Floodplains

81n. Gila/Salt

Abruzzi, W.S., 1995, The social and ecological consequences of early cattle ranching in the Little Colorado River basin: Human Ecology, v. 23, no. 1, p. 75-98.

lower Salt rivers.

2607 | Flat to gently sloping basins and valleys composed of bajadas, alluvial fans,

plains, eroded washes, stream terraces,

and floodplains. Mostly ephemeral and

intermittent streams; however, hydrology

is greatly altered with numerous canals,

rrigation, and agricultural and urban runoff.

Floodplains and terraces of middle Gila and

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Haplocambids, Natrargids,

Entisols (Torrifluvents,

Corripsamments), Aridisols

(Haplocambids, Haplosalids)

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600-1900 / Quaternary (Holocene) fluvial deposits of sand and

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Laveen, Gilman, Mohall, Contine, Hyperthermic /

Estrella, Antho, Denure, Rillito,

Brios, Gilman, Antho, Vint,

Glenbar, Gadsden, Lagunita,

Avondale, Pimer, Sasco, Marana,

Argidurids, Haplodurids), Entisols (Torrifluvents) Coolidge, Casa Grande, Suncity, Pinal, Perryville

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Desert scrub of creosotebush, triangleleaf and white bursage, fourwing saltbush, cholla cactus, ocotillo, saguaro, shrubland, hay and pasture land. Cropland is

38/67; Mesquite, catclaw acacia, creosotebush, paloverde, ironwood, arrowweed, and saltbush. Cottonwoods, willows Cropland, snrubland, nay and pasture land, woody and herbaceous wetlands; some urban, suburban, and residential land uses. Cropland is primarily ha

Arizona Geological Survey, Map 35, scale 1:1,000,000.

paloverde. Most natural vegetation has been removed.

and tamarisk grow in open areas.

mesquite, big galleta, and scattered ironwood and littleleaf primarily hay and alfalfa, cotton, vegetables,

Urban, suburban, and residential land uses, cropland,

Trust) and tribal land (Gila River and Salt River).

Cropland, shrubland, hay and pasture land, woody

and residential land uses. Cropland is primarily hay and alfalfa, cotton, corn, and barley. Some public land (State Trust, BLM) and tribal land (Gila River, Tohono O'odham, Gila Bend, and Salt River).

melons, wheat, and barley. Some cattle and dairy

production. Minor areas of public land (State

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