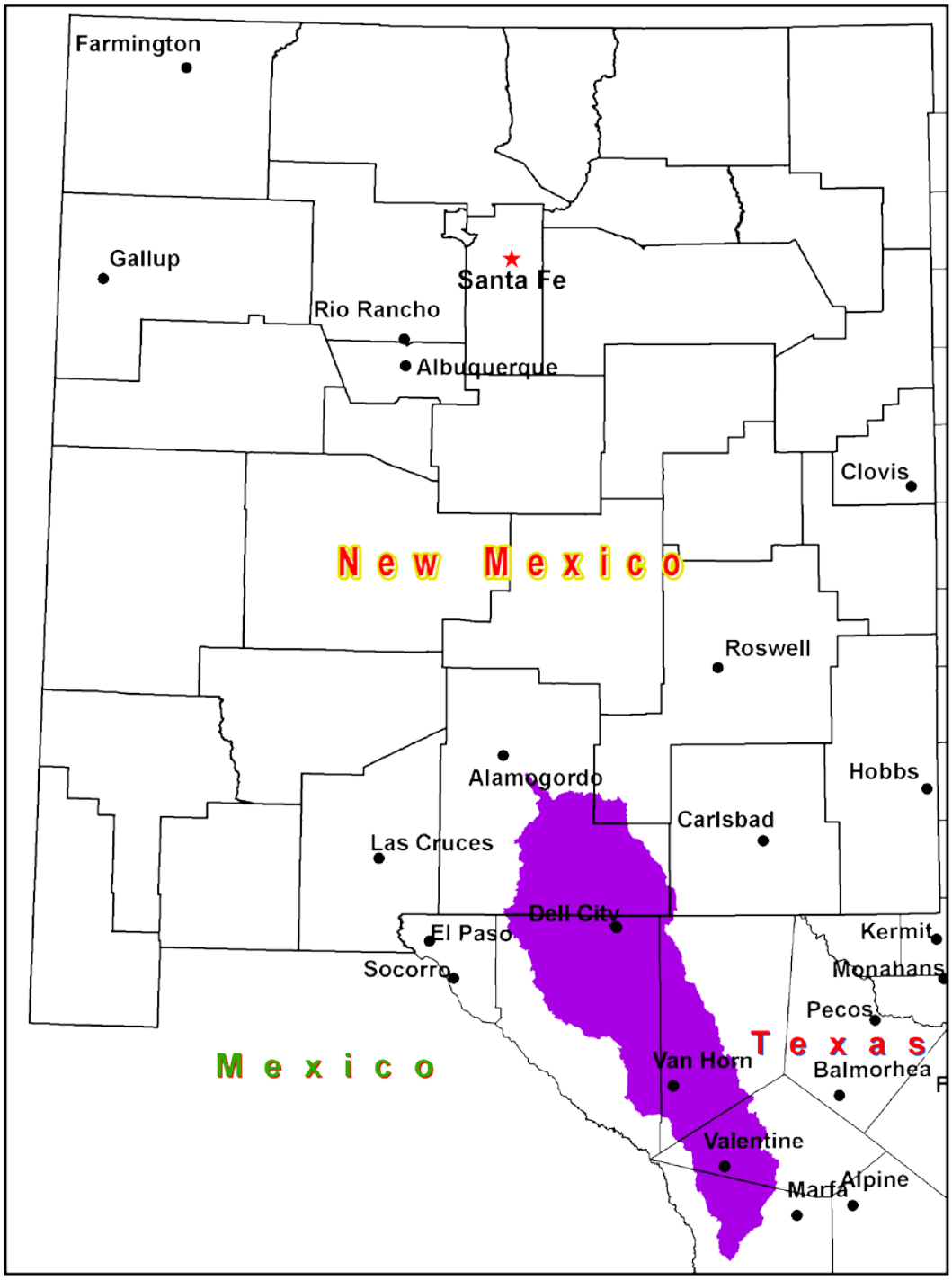
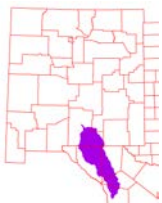


Rapid **W**atershed **A**ssessment

Salt Basin Watershed



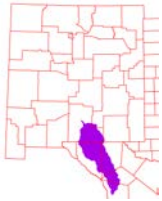
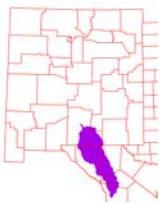
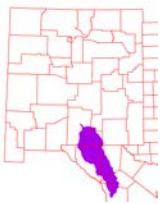


Table of Contents

List of Tables



List of Figures



Overview

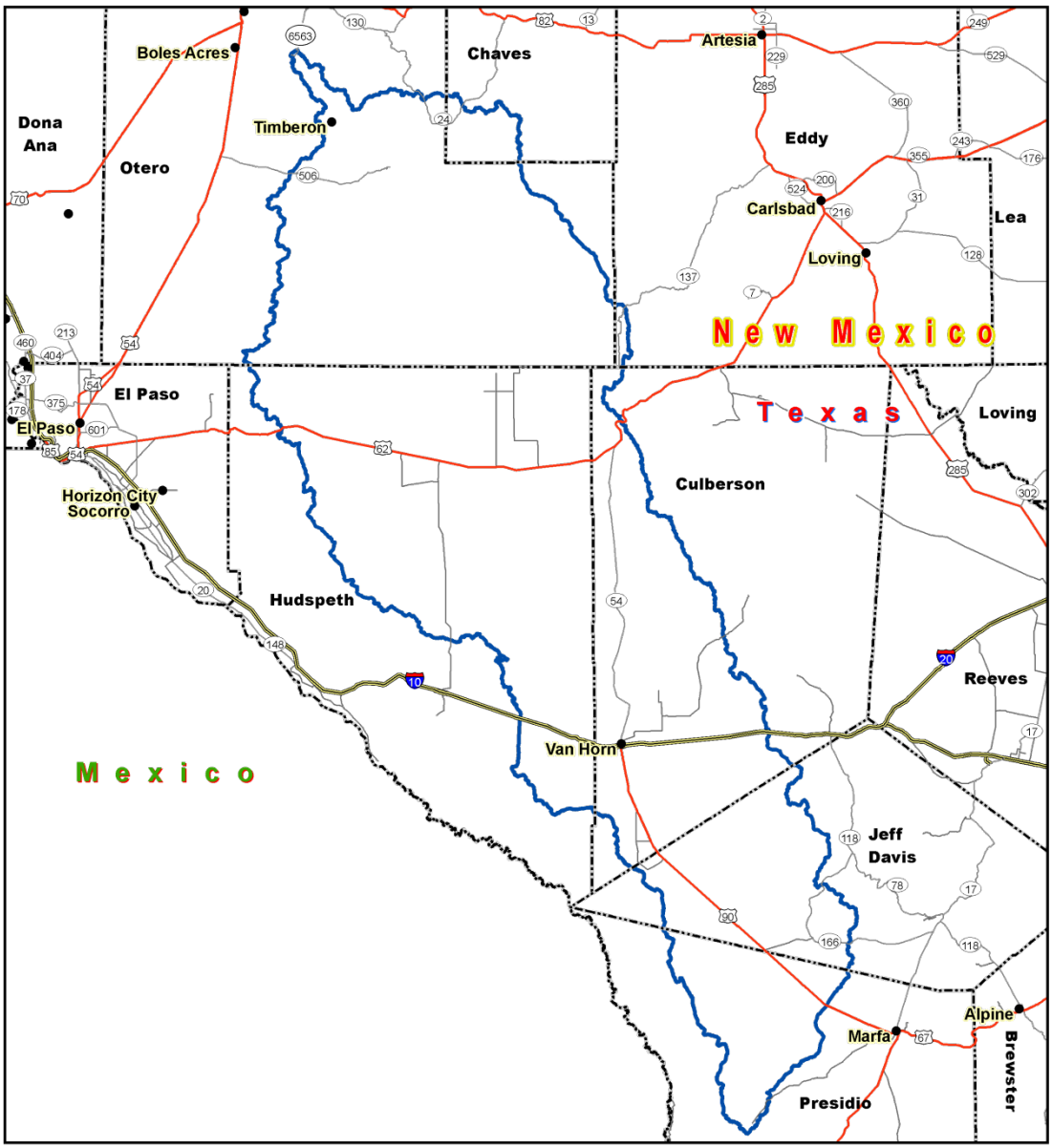
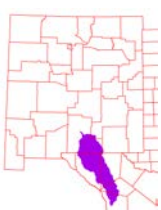


Figure 1. Salt Basin Watershed Overview.

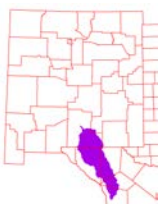


Overview

The Salt Basin Watershed is located in south central New Mexico and in northwestern part of Texas. It covers 5,065,629 total acres (20,500 sq. km). Portions of the Salt Basin Watershed are in Chaves, Eddy, and Otero counties in New Mexico and Culberson, Hudspeth, Jeff Davis, and Presidio counties in Texas. Table 1 summarizes the distribution of the Salt Basin Watershed.

County	County Acres Total	Acres in HUC	% of HUC in County	% of County in HUC
Chaves , NM	3,885,365	79,963	2	2
Eddy , NM	2,684,688	15,162	0	1
Otero, NM	4,238,818	1,415,569	28	33
Culberson, TX	2,439,575	984,780	19	40
Hudspeth, TX	2,922,491	1,721,199	34	59
Jeff Davis, TX	1,447,630	487,819	10	34
Presidio,TX	2,466,257	361,134	7	15
Sum (∑)	--	5,065,629	100	--

Table 1. Salt Basin Watershed acreage distribution.



Physical Setting

Geology:

The HUC has a northwest boundary at Sacramento Peak in the Lincoln National Forest. The boundary proceeds southward to Culp Peak; then to Otero Mesa; southward to Red Hill in the Hueco Mountains; Cerro Alto Mountain; Naville Mountain; Deer Mountain; crosses U.S. Highway 180 and 280 just east of Panther Tank; south southeastward to Shakespeare Tanks; Smith Mesa; Gunsight Hills; crosses Farm to Market Road 1111 northeast of Mile High and proceeds eastward to Round Mountain; Dome Peak; Streeruwitz Hills; crosses Interstate 10 heading southward just west of Eagle Flat; Little Hills; Eagle Peak in the Eagle Mountains; heading eastward crosses Green River Road near the Plata Verde Mines; down the Van Horn Mountains to North Mesa; Newton Mesa; Star Mesa; down the Sierra Vieja; Capote Peak; El Macho; Cleveland Peak; crosses Pinto Canyon Road nears its junction with Farm to Market Road 2810; heads northeastward to the Oak Hills; crosses U.S. Highway 90 about halfway between Ryan and Marfa; Mine Mountain in the Davis Mountains; Brown Mountain; Paradise Mountain; Mount Livermore; Baldy Peak; Sawtooth Mountain; crossing State Route 166 at H O Hill; Bear Mountain; Geronomo Mountain; crosses Broken Tank Road at South Tank; heading northward between Rock and Fish Tanks; Horse Camp Peak; crosses Interstate 10 near Tepee Tank; east of W D Tank in the Apache Mountains; through Seven Heart Gap; crosses Farm to Market Road 2185 near Johnson Tank into the Delaware Mountains; Cooky Hat Point; to Guadalupe Peak in the Guadalupe Peak Mountains. The northern boundary passes through Jefferies Peak; Chimney Peak; Lewis Peak; southward to Russell Gap; along the spine of the Guadalupe Mountains to Pickett Hill; Deer Hill; Bush Mountain; Bartlett Peak; and Guadalupe Peak.

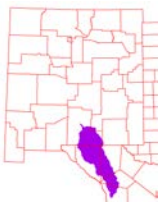
The bedrock in the New Mexico portion of the watershed is predominantly Pennsylvanian to Permian Period limestones, dolomite and sandstone. The limestone is porous and has many sinkholes. Caliche also forms on the ground surface. These slope eastward down into the Pecos River Valley. The valleys contain Quaternary Period alluvium deposits and older alluvial deposits of the piedmont and upland plains. The Apache Mountains, Delaware Mountains, and Guadalupe Mountains are also a part of this sequence.

The Davis Mountains were formed during the Eocene and Oligocene Epochs when lava domes, flows and tuffs occurred.

In Texas, between the Hueco-Sierra Diablo Mountains and the Guadalupe-Delaware-Apache mountains, are the salt flats. These flats are comprised of eolian deposits and white alkali salt flats.

Resource concerns are high sediment erosion. In addition the lowering of valleys by river incision is a continuing process. Rivers respond by aggrading during climates that promote large sediment yield and large, stable discharges; and incise during climates that produce flashy flows and reduce the sediment supply.

Groundwater quality and quantity is a concern. Depth to groundwater is a concern if the shallow unconfined aquifer does not produce enough water for the resource or increased population



demands are 'mining' the water. Groundwater in the limestone is usually along fracture zones which are hard to intercept with water wells. Groundwater quality ranges from good to poor for livestock or crops, especially in the salt flats.

Soils:

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

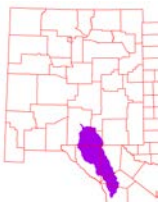
The soils in the Sal Basin Watershed are assigned to four groups (A, B, C, and D).

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.



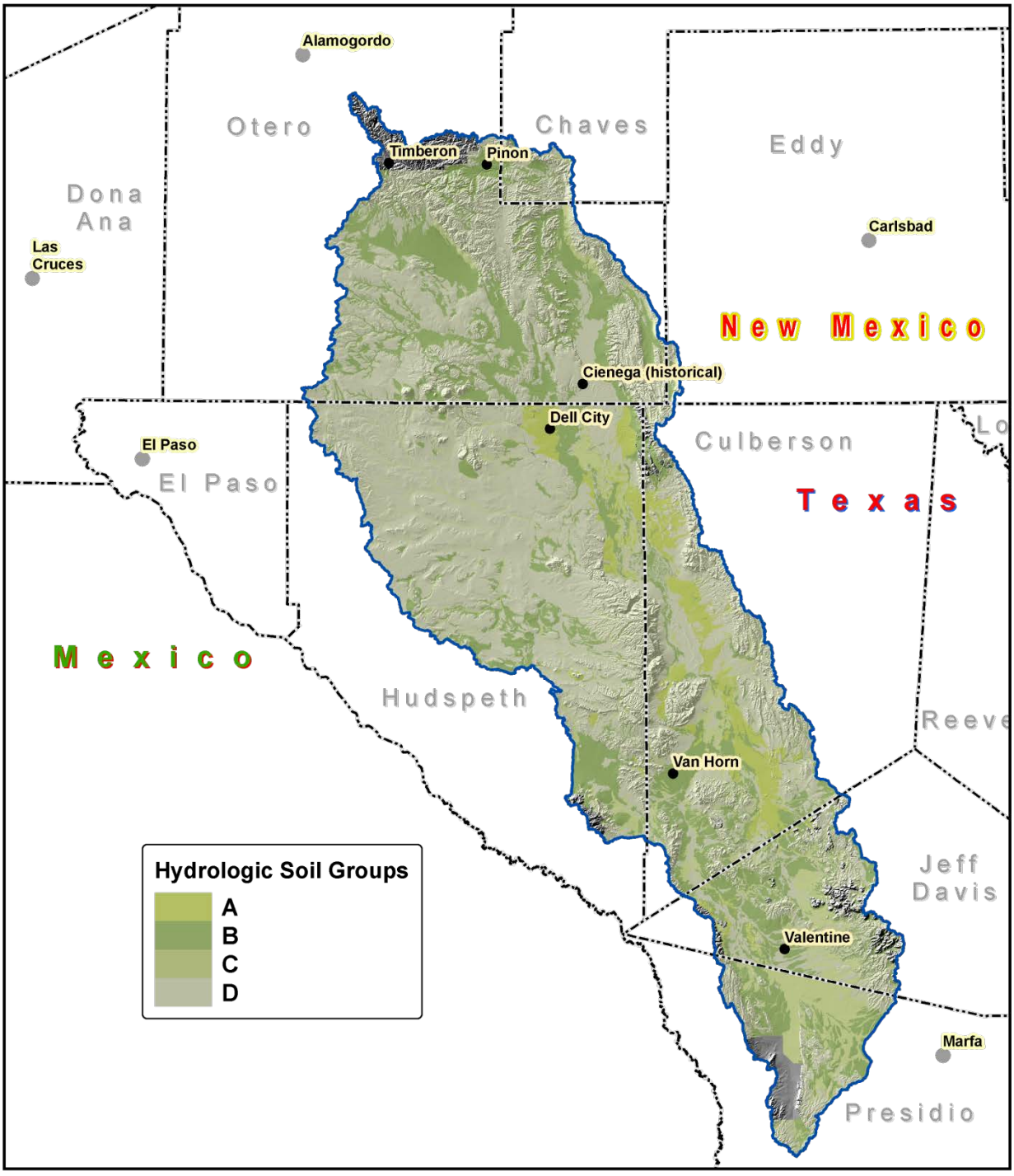
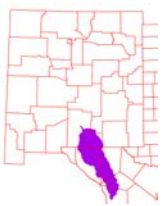


Figure 2. Hydrologic Soil Groups



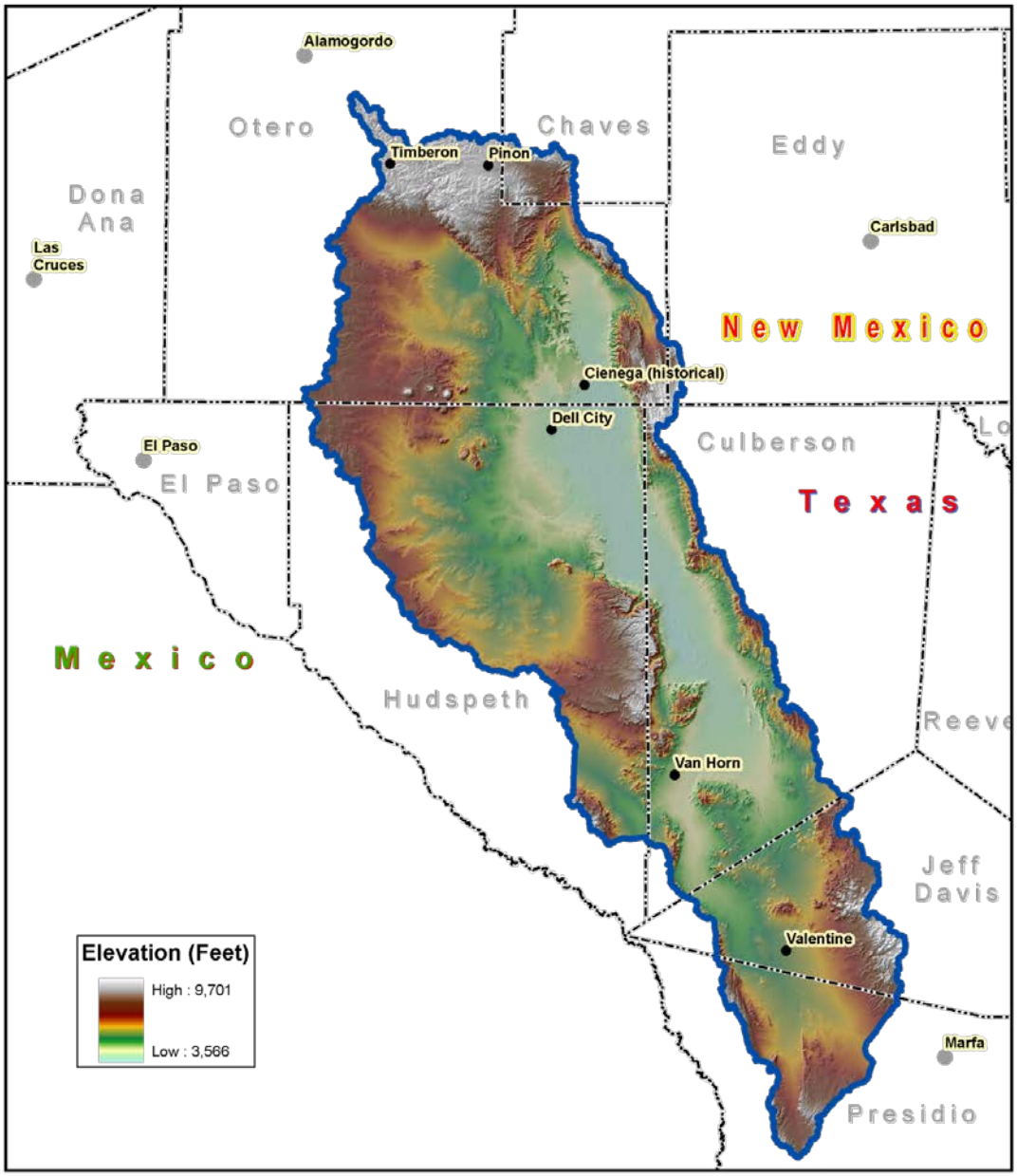
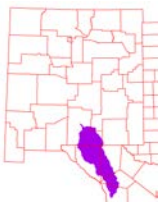


Figure 3. Salt Basin Watershed Shaded Relief



Precipitation [1]

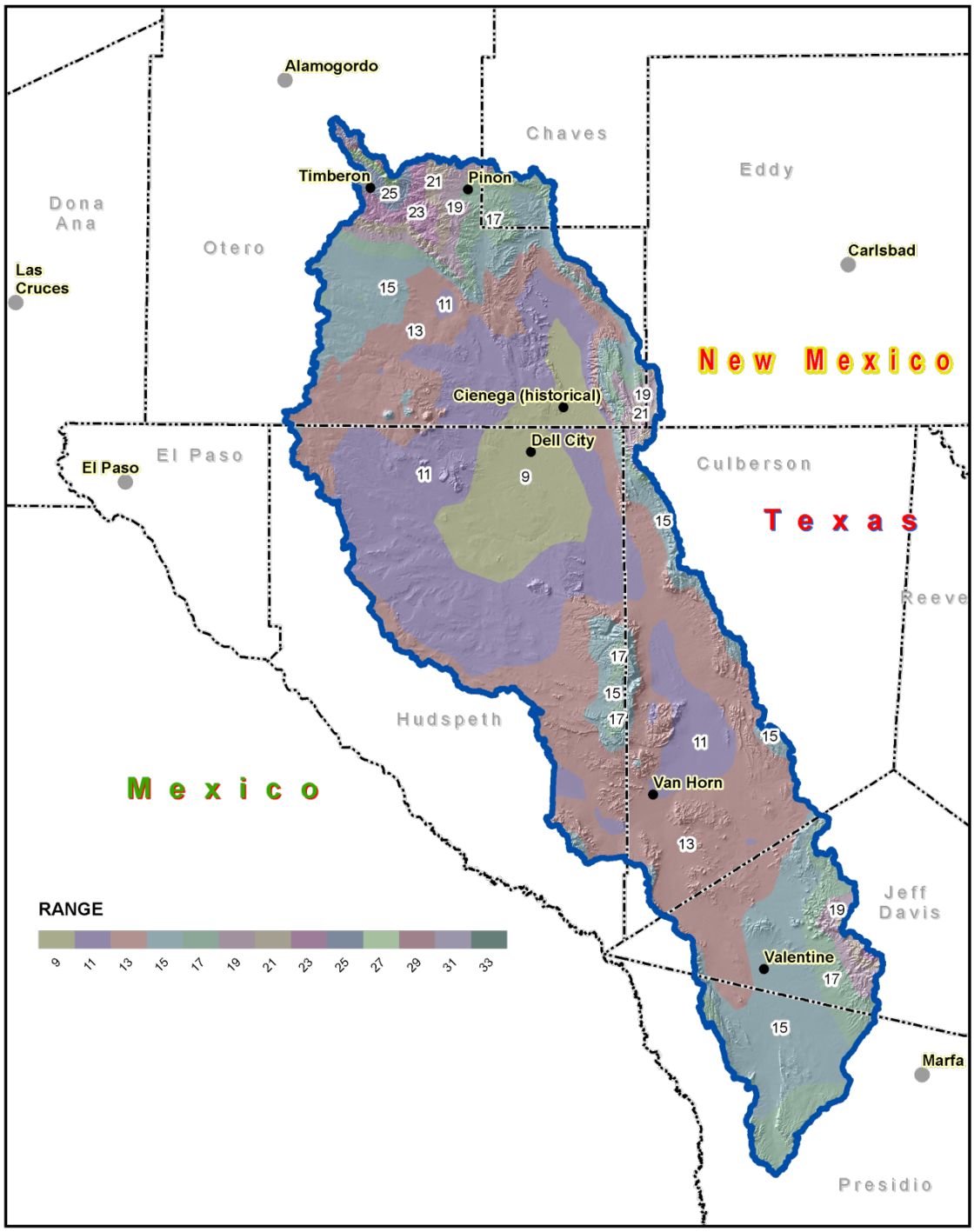
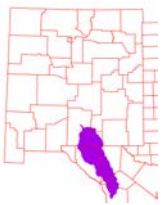


Figure 4. Salt Basin Watershed Annual Precipitation.



Land Ownership [2]

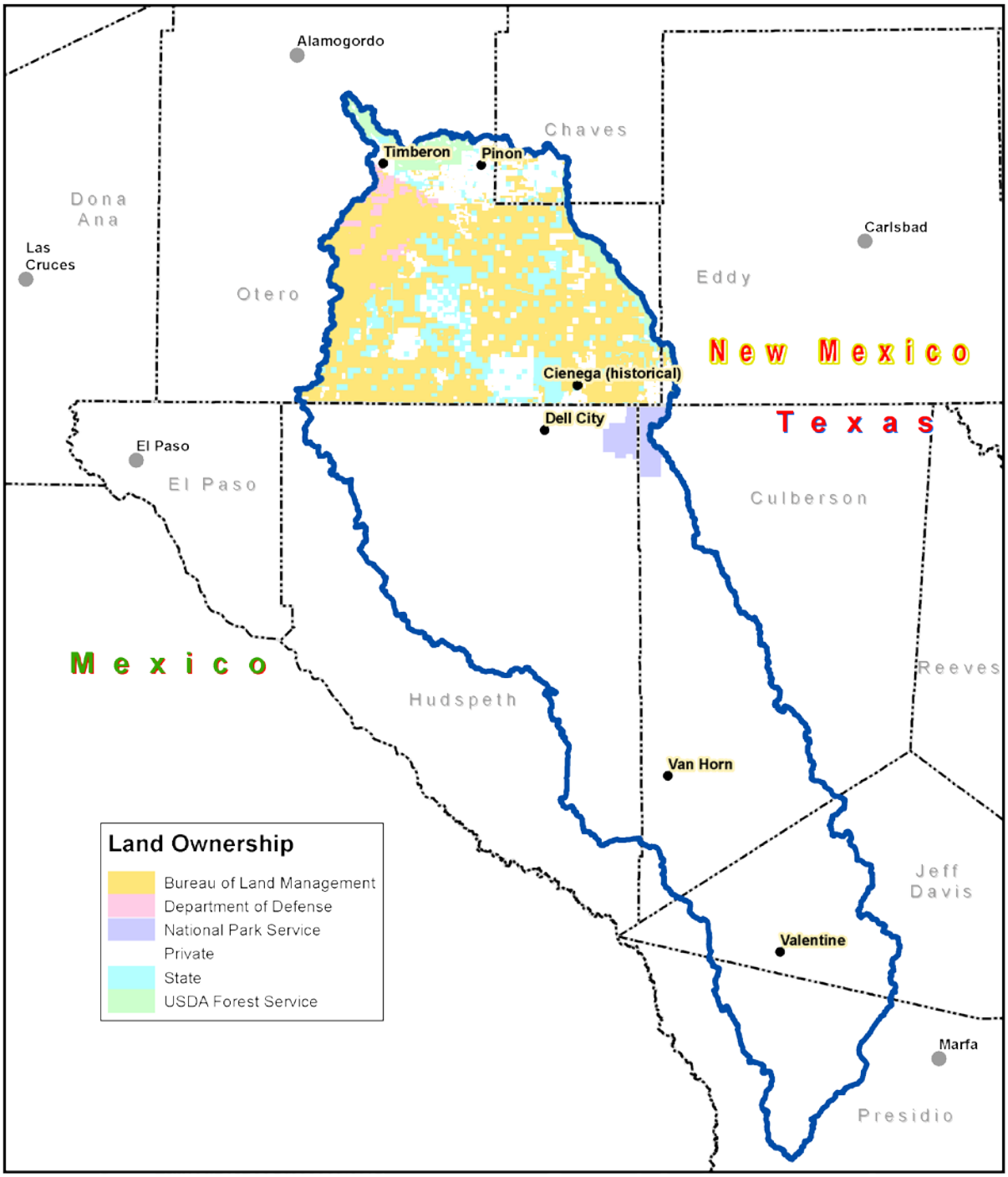
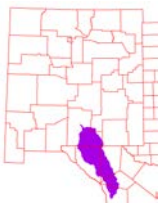


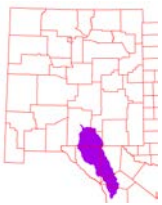
Figure 5. Salt Basin Watershed Land Ownership.



Land Ownership

County	BLM	Department of Defense	National Park Service	Private	State	USDA Forest Service
Chaves, NM	19,718			48,201	8,551	3,493
Eddy, NM	2,441			6,928	841	4,918
Otero, NM	846,121	31,672		211,495	235,597	90,425
Culberson, TX			32,427	952,467		
Hudspeth, TX			27,425	1,693,956		
Jeff Davis, TX				487,819		
Presidio, TX				361,134		
Sum (∑)	868,280	31,672	59,852	3,762,000	244,989	98,836

Table 2. Land ownership in the Salt Basin watershed.



Land Use / Land Cover [3,4]

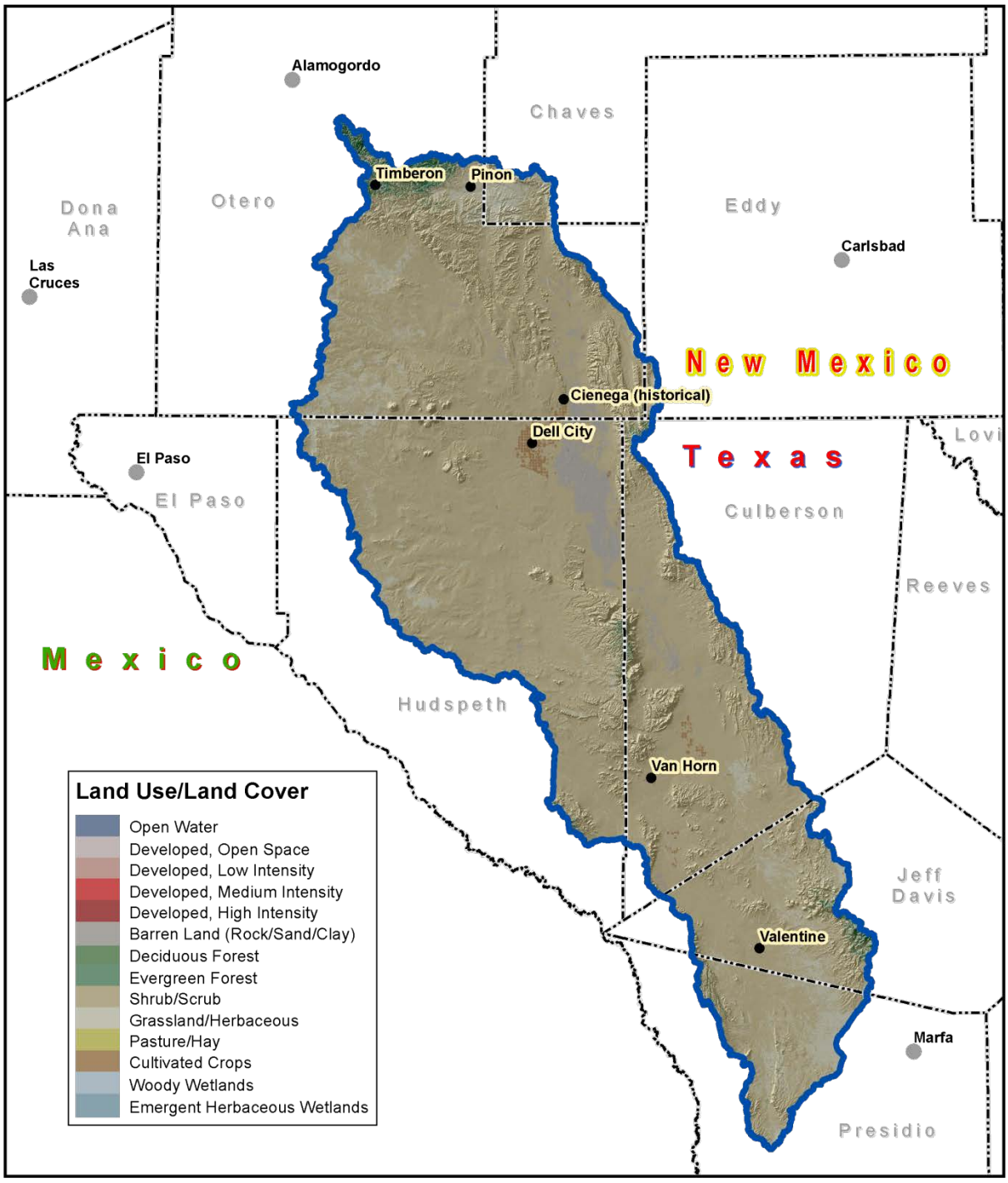
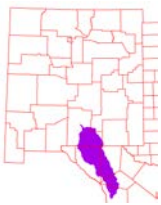


Figure 6. Subset of the National Land Cover Dataset in the Salt Basin Watershed.

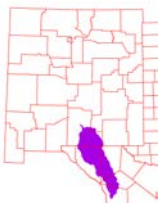


Land Use / Land Cover

The U.S. Geological Survey (USGS) produced the National Land Cover Dataset (NLCD) as part of a cooperative project between the USGS and the U.S. Environmental Protection Agency (USEPA). The goal of this project was to produce a consistent land cover data layer for the conterminous United States. The Multiresolution Land Characterization (MRLC) Consortium collected the data used to compile the NLCD. The MRLC Consortium is a partnership of Federal agencies that produce or use land cover data; partners include the UNITED STATES GEOLOGICAL SURVEY (National Mapping, Biological Resources, and Water Resources Divisions), USEPA, the U.S. Forest Service, and the National Oceanic and Atmospheric Administration.

Ecosystem	Acres	% of Watershed
Shrub/Scrub	4,302,347	85
Grassland/Herbaceous	454,209	9
Barren Land (Rock/Sand/Clay)	149,812	3
Evergreen Forest	102,920	2
Cultivated Crops	31,340	1
Developed, Open Space	19,781	< 1
Developed, Low Intensity	1,358	< 1
Woody Wetlands	1,284	< 1
Pasture/Hay	970	< 1
Open Water	762	< 1
Deciduous Forest	546	< 1
Developed, Medium Intensity	165	< 1
Developed, High Intensity	38	< 1
Emergent Herbaceous Wetlands	9	< 1

Table 3. Extent of NLCD classes in the Salt Basin watershed.



Land Use / Land Cover

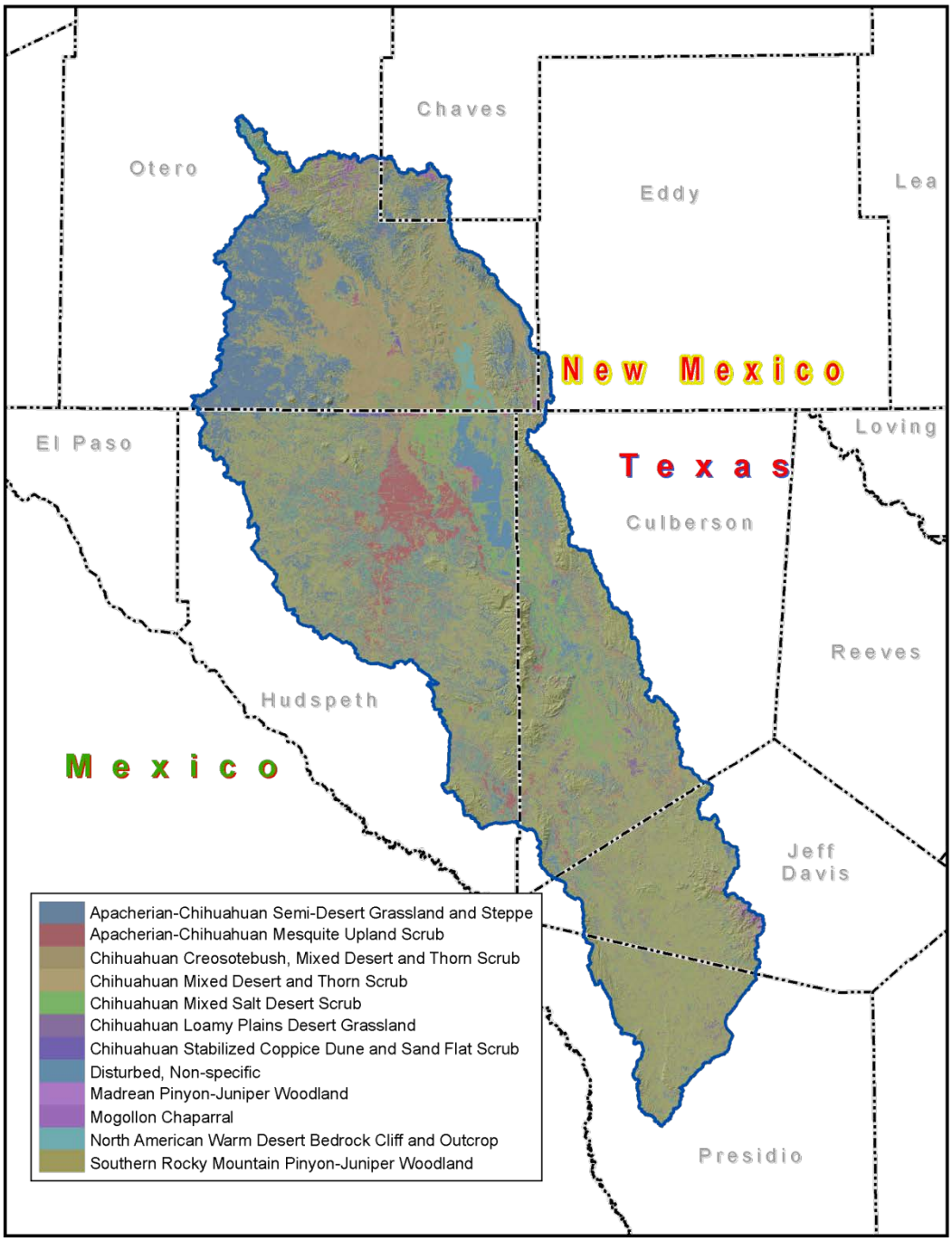
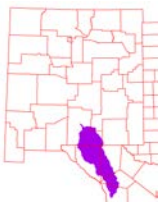


Figure 7. Subset of the SWREGAP over the Salt Basin Watershed. The 12 dominant ecosystems are displayed in the legend.

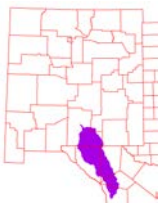


Land Use / Land Cover

The land cover mapping effort for the Southwest Region Gap Analysis Project was a coordinated multi-institution endeavor. This dataset was created for regional terrestrial biodiversity assessment. Additional objectives were to establish a coordinated mapping approach to create detailed, seamless maps of land cover, all native terrestrial vertebrate species, land stewardship, and management status, and to analyze this information to identify those biotic elements that are underrepresented on lands managed for their long term conservation.

ECOSYSTEM	Acres	% of Watershed
Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	1,524,979	30
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	1,136,024	22
Chihuahuan Mixed Desert and Thorn Scrub	894,227	18
Apacherian-Chihuahuan Mesquite Upland Scrub	377,221	7
Chihuahuan Mixed Salt Desert Scrub	229,895	5
Disturbed, Non-specific	174,895	3
Chihuahuan Loamy Plains Desert Grassland	155,370	3
Madrean Pinyon-Juniper Woodland	104,449	2
North American Warm Desert Bedrock Cliff and Outcrop	69,433	1
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	46,839	1
Southern Rocky Mountain Pinyon-Juniper Woodland	30,596	1
Mogollon Chaparral	29,679	1

Table 4. SW Region Gap analysis ecosystem acreages.



Hydrology [5,6,7,8,9,10]

The National Hydrography Dataset (NHD) is a comprehensive set of data that encodes information about naturally occurring and constructed bodies of water, paths through which water flows, and related entities. The NHD identifies 14,973 miles (24,097 km) of water courses in the Salt Basin Watershed. The majority of these courses typically flow intermittently in summer months during periods associated with high intensity convective thunderstorms.

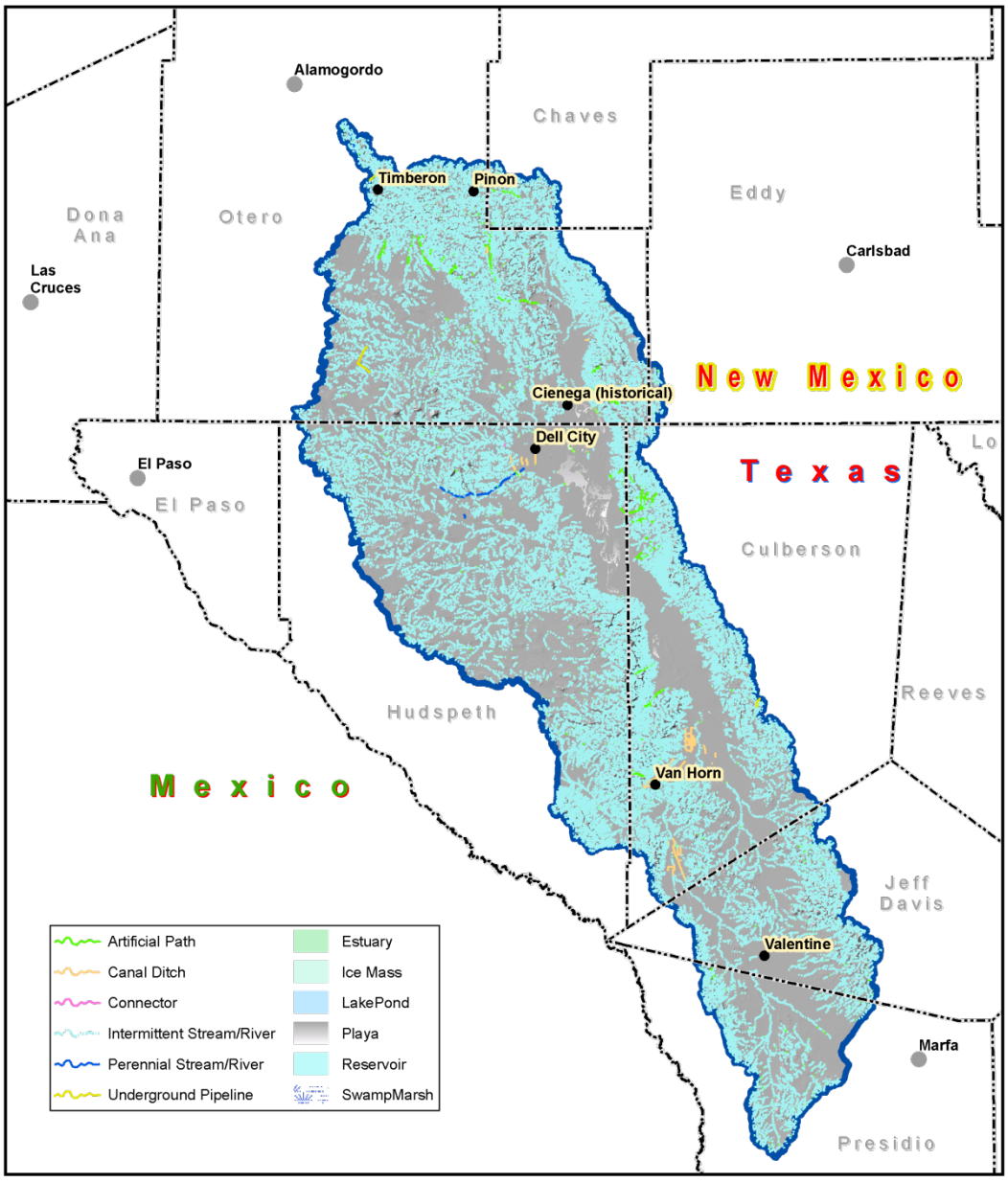
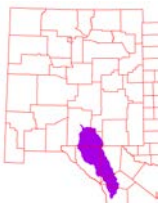
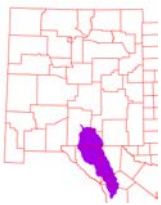


Figure 8. National Hydrolgic Dataset (NHD) of the Salt Basin watershed.



Water Course Type	Miles
Artificial Path	242
Canal/Ditch	74
Connector	2
Intermittent Stream/River	14,622
Perennial Stream/River	23
Underground Pipeline	10
Sum (∑)	14,973

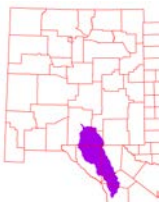
Table 5. NHD Water Course Type and Extents



Gauging Stations:

There are 8 dams and water gauging stations in the watershed. USGS Site 08492900 is near the northwest corner of the watershed on the Sacramento River near Sunspot, NM. During the period 1984-1989, this site has had mean annual discharge of 3.62 cubic feet per second ranging from 1 in June (1988) to 12.1 in January (1985) cubic feet per second.

Figure 9. Gauging Stations in the Salt Basin Watershed.



Hydrology

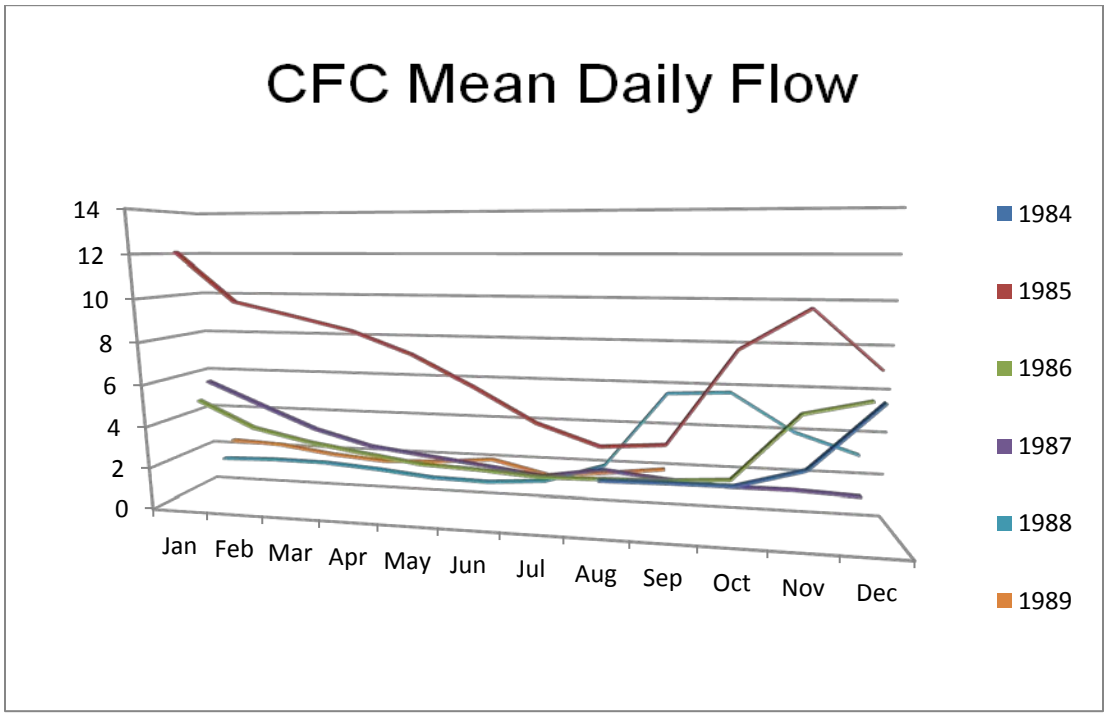
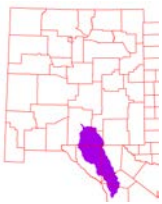


Figure 10. Monthly average of Mean Daily Flow on the Sacramento River near Sunspot, NM. Period of observation: 1984-1989.



New Mexico Water Quality Control Commission (NMWQCC):

The New Mexico Water Quality Control Commission (NMWQCC) is the issuing agency of water quality standards for interstate and intrastate waters in New Mexico.

Under section 303(d) of the Clean Water Act, states, territories, and authorized tribes, are required to develop lists of impaired waters. These are waters for which technology-based regulations and other required controls are not stringent enough to meet the water quality standards set by states. The law requires that states establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs), for these waters. A TMDL is a calculation of the maximum amount of a pollutant a water body can receive and still safely meet water quality standards. There are no water bodies for the Salt Basin Watershed.

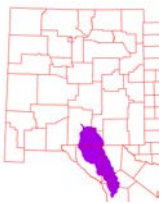
There are no designated Impaired Surface Waters or water bodies for the New Mexico portion of the Salt Basin watershed.

Texas Commission on Environmental Quality (TCEQ):

The Texas Commission on Environmental Quality (TCEQ) is the issuing agency of water quality standards for interstate and intrastate waters in Texas. There are no designated Impaired Surface Waters or water bodies for the Texas portion of the Salt Basin watershed as of March 19, 2008.

Groundwater Basins

A declared groundwater basin is an area of the state proclaimed by the State Engineer to be underlain by a groundwater source having reasonably ascertainable boundaries. By such proclamation the State Engineer assumes jurisdiction over the appropriation and use of groundwater from the source. There are 6 declared groundwater basins in the Salt Basin watershed: Carlsbad, Penasco, Roswell, Salt, Tularosa and GMA 4.



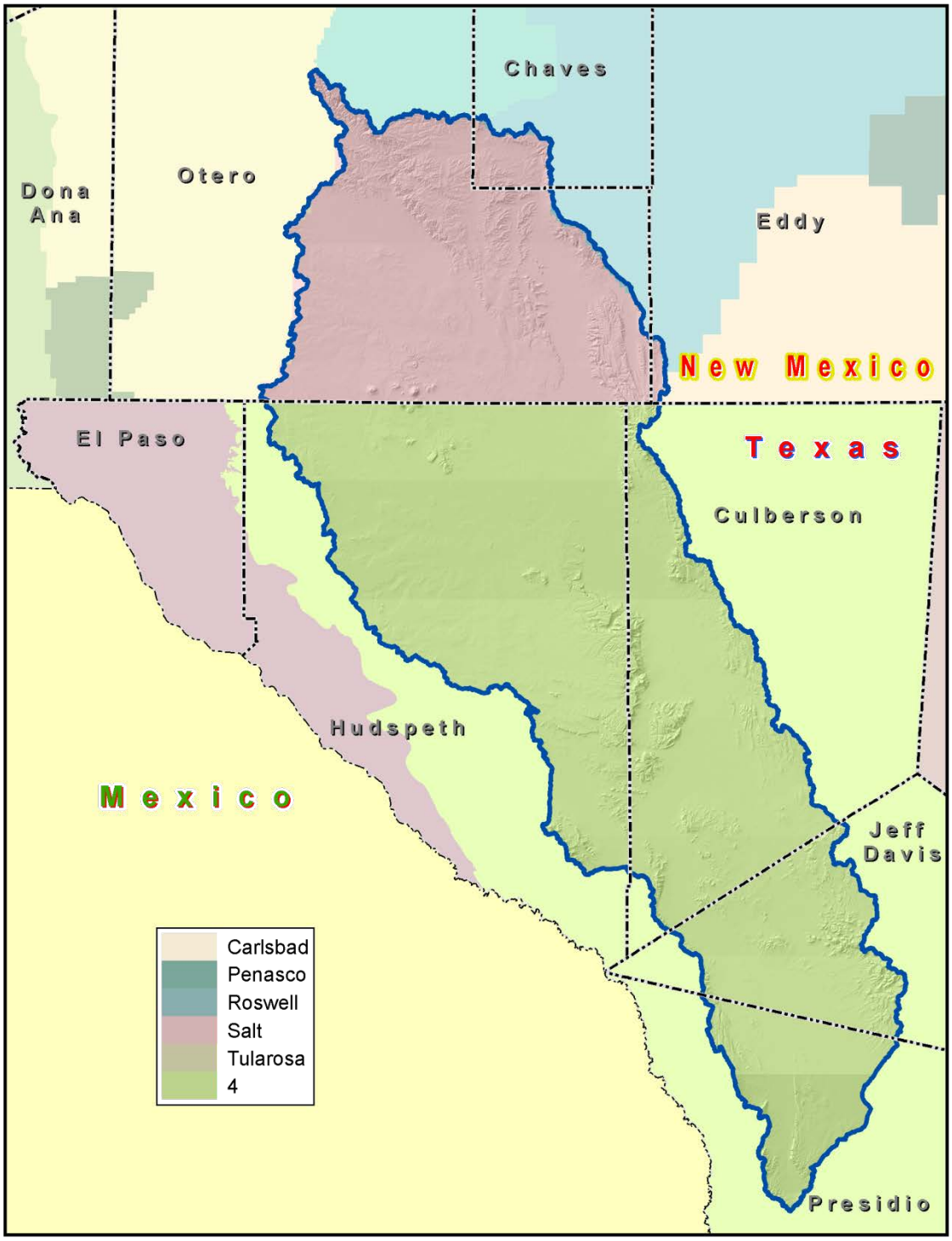
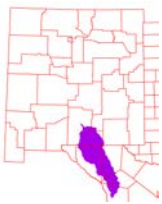


Figure 11. Declared Groundwater Basins of the Salt Basin.

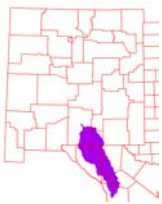


Threatened and Endangered Species [11, 12]

Endangered species are those that are at risk of extinction throughout all or a significant portion of its native range. A threatened species is one that is likely to become endangered in the foreseeable future. The New Mexico Natural Heritage and the Texas Parks & Wildlife Department programs track the status of threatened and endangered species which are listed on both federal and state lists. Table 6 lists those species which are currently listed and tracked in the Salt Basin Watershed.

Common Name	Scientific Name	Tax.Class	Family	Fed Status	State Status
American Peregrine Falcon	*Falco peregrinus anatum*				T
Black bear	*Ursus americanus*				T
Black-footed ferret	*Mustela nigripes*			LE	
Chihuahuan Desert lyre snake	*Trimorphodon vilkinsonii*				T
Comanche Springs pupfish	*Cyprinodon elegans*			LE	E
Common Black-Hawk	*Buteogallus anthracinus*				T
Gray wolf	*Canis lupus*			LE	E
Hinckley's oak	*Quercus hinckleyi*			LT	T
Interior Least Tern	*Sterna antillarum athalassos*			LE	E
Little Aguja pondweed	*Potamogeton clystocarpus*			LE	E
Lloyd's mariposa cactus	*Sclerocactus mariposensis*			LT	T
Mexican long-nosed bat	*Leptonycteris nivalis*			LE	E
Mexican Spotted Owl	*Strix occidentalis lucida*			LT	T
Mountain short-horned lizard	*Phrynosoma hernandesi*				T
Northern Aplomado Falcon	*Falco femoralis septentrionalis*			LE	E
Pecos gambusia	*Gambusia nobilis*			LE	E
Pecos pupfish	*Cyprinodon pecosensis*				T
Peregrine Falcon	*Falco peregrinus*				T
Rio Grande silvery minnow	*Hybognathus amarus*			LE	E
Southwestern Willow Flycatcher	*Empidonax traillii extimus*			LE	E
Texas horned lizard	*Phrynosoma cornutum*				T
Zone-tailed Hawk	*Buteo albonotatus*				T
Sacramento Mountains Thistle	*Cirsium vinaceum*	Dicotyledoneae	Asteraceae	LT	E

Table 6. Threatened and Endangered Plant and Animal Species

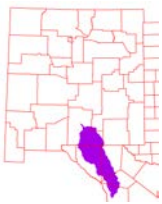


Invasive Species [13,14]

Invasive species are those which have been introduced into a region or ecosystem and have the ability to out-compete native species for resources (i.e. water, nutrients, sunlight, etc.) The Southwest Exotic Plant Mapping Program (SWEMP) is a collaborative effort between the United States Geological Survey and federal, tribal, state, county and non-government organization partners in the southwest which maintains ongoing efforts to compile and distribute regional data on the occurrence of non-native invasive plants in the southwestern United States. Within the Salt Basin watershed, the SWEMP and texasivasinves.org have identified 15 species of invasive plants (Table 7). Each of these species is defined as non-native by the USDA PLANTS database.

Scientific Name	Common Name
Zygophyllaceae (Caltrop Family)	African Rue
Scrophulariaceae (Figwort Family)	Dalmation Toadflax
Brassicaceae (Mustard Family)	Hoary Cress (Whitetop)
Euphorbiaceae (Spurge Family)	Leafy Spurge
Asteraceae (Sunflower Family)	Musk Thistle
Asteraceae (Sunflower Family)	Russian Knapweed
Asteraceae (Sunflower Family)	Spotted Knapweed
Asteraceae (Sunflower Family)	Yellow Starthistle
Poaceae (Grass Family)	Giant reed
Tamaricaceae (Tamarisk Family)	Salt Cedar
Solanaceae (Potato Family)	Tree tobacco
Zygophyllaceae (Creosote-Bush Family)	Punctureveine
Poaceae (Grass Family)	King Ranch bluestem
Chenopodiaceae (Goosefoot Family)	Prickly Russian thistle
Poaceae (Grass Family)	Buffelgrass

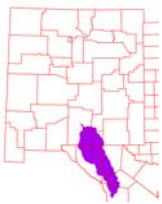
Table 7. Invasive Species Recognized by the SWEMP and texasinvasives.org



Common Resource Areas[15]

A Common Resource Area (CRA) is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) designation. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area. Each Common Resource Area will have multiple Conservation System Guides associated with it. A Conservation System Guide associates, for a given CRA and land use, different components of Resource Management Systems and their individual effect on conserving soil and water resources.

Figure 12. Common Resource Areas of the Salt Basin Watershed.



Common Resource Areas

39.2 - Central New Mexico Mountains

This unit occurs within the Colorado Plateau Physiographic Province and is characterized by volcanic fields and gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Elevations range from 7000 to 12000 feet. Precipitation ranges 17 to 25 inches per year. The soil temperature regime ranges from mesic to frigid. Vegetation includes corkbark, Douglas and white fir, Englemann spruce, pinyon and southwestern white pine, and aspen. Grasslands include tufted hairgrass, sedges, and Arizona and Thurber fescue.

42.2 - Chihuahuan Desert Shrubs

This unit occurs within the Basin and Range Physiographic Province and is characterized by valley plains, alluvial fans, and mountains. Sediments are from fluvial, lacustrine, colluvial and alluvial deposits. Igneous and metamorphic rock dominate the mountain ranges. Elevations range from 3800 to 5200 feet. Precipitation ranges from 8 to 10 inches per year. The soil temperature regime is thermic. The soil moisture regime is typic aridic. Vegetation includes Creosote, tarbush, soaptree yucca, torrey yucca, tobosa, and alkali sacaton.

42.3 - Chihuahuan Desert Grassland

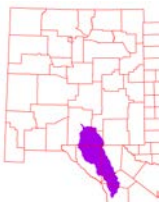
This unit occurs within the Basin and Range Physiographic Province and is characterized by valley plains and alluvial fans broken by the Pecos River. Drainage divides are low and inconspicuous forming one great plain. Elevations range from 2800 to 5000 feet. Precipitation ranges from 8 to 13 inches per year. The soil temperature regime is thermic. The soil moisture regime is aridic. Vegetation includes tobosa, alkali sacaton, black grama, burrograss, creosote bush, tarbush, soaptree yucca, catclaw, fourwing saltbush, winterfat, mesquite and desert willow.

42.4 - Dry Mixed Prairie

This unit occurs within the Basin and Range Physiographic Province and is characterized by broad prairie grassland. Elevations range from 4700 to 6000 feet. Precipitation ranges from 12 to 14 inches per year. The soil temperature regime is thermic. The soil moisture regime is ustic aridic . Vegetation consists primarily of blue gramma, black grama, and yucca. Swales and drainages include tobosa and alkali sacaton. Creosote and mesquite are common shrubs.

42.5 - Moist Mixed Prairie

This unit occurs within the Basin and Range Physiographic Province and is characterized by broad prairie grasslands. Elevation is 4500 to 6500 feet. Precipitation ranges from 13 to 18 inches. The soil temperature regime is thermic. The soil moisture regime is aridic ustic. Vegetation consists primarily of blue, black and sideoats gramas. Swales and drainages include cane bluestem, vine-mesquite, tobosa and sacatons. Common shrubs include yucca, sotol, ephedra, creosote, mesquite and cactus. Some juniper and oak are present.



42.6 - Mountain Savannah

This unit occurs within the Basin and Range Physiographic Province and is characterized by hilly and steep mountain slopes and canyons. Elevation is 6500 to 7500 feet. Precipitation ranges from 18 to 25 inches. The soil temperature regime is mesic. The soil moisture regime is typic ustic. Vegetation consists of blue, black and sideoats gramas and bull muhly on slopes. Canyons include bull muhly and deergrass. Shrubs include catclaw, agarito, and mountain mahogany. Trees include juniper, oaks, Texas madrone, pinyon and ponderosa pines.

70C.1 - Central New Mexico Highlands

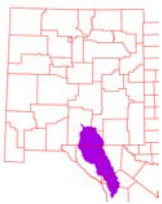
Tablelands and mesas separated by broad plains and small terraces characterize this area. Elevation is 5,000 to 7,200 feet and precipitation is 12 to 17 inches. The soil moisture regime is aridic to ustic and the soil temperature regime is mesic. Pinyon-juniper savannah and pinyon juniper woodlands at higher elevations, and broad mid- to short-grass prairies and basins at lower elevations dominate the area. Current land use is livestock grazing. The soils formed in Quaternary alluvium, eolian sands, and sedimentary rocks of Permian age. (Old CP-3)

70D.1 - Southern New Mexico Foothills

This unit is characterized by nearly level to steep limestone hills with steep, narrow drainageways. Elevation ranges from 4,000 to 7,000 feet and average annual precipitation is 13 to 18 inches. Native vegetation is sparse and consists of pinyon, juniper, algerita, agave, yucca and cacti. Grasses include blue and black grama, little bluestem, and muhly species. Shrubs include catclaw, ocotillo, sotol and fourwing saltbush. Much of the area is federally owned. Federal and private lands are used for grazing, wildlife habitat, and military training.

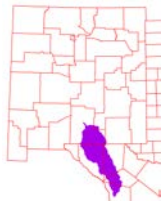
Conservation [16]

The USDA-Natural Resources Conservation Service (NRCS) focuses on the development and delivery of high quality products and services that enable people to be good stewards of our Nation's soil, water, and related natural related resources on non-Federal lands. The Natural Resources Conservation Service's conservation programs aid agricultural producers in their efforts to reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters. Public benefits include enhanced natural resources that help sustain agricultural productivity and environmental quality while supporting continued economic development, recreation, and scenic beauty.



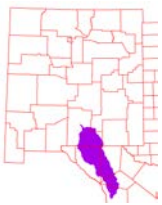
Conservation Practice	2006		2007		2008		2009		2010		TOTAL	
	#	Acres	#	Acres	#	Acres	#	Acres	#	Acres	#	Acres
Brush Management	2	2,900	2	6,119	3	12,703	3	11,010	5	12,674	14	45,406
Conservation Cover	1	139	1	1,301							2	1,440
Conservation Crop Rotation			1	224	1	1,930					2	2,154
Forest Stand Improvement	1	40			1	70					1	110
Irrigation Land Leveling					2	197					2	197
Irrigation System, Microirrigation			1	2							1	2
Irrigation System, Sprinkler			2	3,760							2	3,760
Irrigation Water Management			2	855	3	2,580	3	1,730			8	5,165
Prescribed Grazing	6	115,183	4	279,661	4	97,631	5	85,656	5	276,229	24	854,360
Residue Management, Seasonal			1	224	1	1,301					2	1,525
Upland Wildlife Habitat Management	4	207,846	3	145,006	2	104,569	4	141,995	3	202,816	16	802,232
SUM (∑)	14	326,108	17	437,152	17	220,911	14	240,391	13	491,719	75	1,716,347

Table 8. 5 year Trends in Applied Conservation Practices. Reported in Acres.



Conservation Practice	2006		2007		2008		2009		2010		TOTAL	
	#	Feet	#	Feet	#	Feet	#	Feet	#	Feet	#	Feet
Diversion	1	38,851									1	38,851
Fence	1	2,366	1	6,537	1	11,050	2	51,266	3	31,657	8	102,877
Grade Stabilization Structure			1		1				1		3	
Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic			2	513	2	100	1	7			5	621
Pipeline	1	32,934	2	40,307	2	46,713	2	124,891	2	85,819	9	330,663
Pond					1						1	
Pumping Plant							1		2		3	
Water Well							2		1		3	
Watering Facility	1		2		2		1		1		7	
SUM (∑)	4	74,151	8	47,357	9	57,863	9	176,164	10	117,476	40	473,012

Table 9. 5 Year Trends in Location Specific Applied Conservation Practices. Reported in Feet if Linear (i.e. Fence)



Soil Resource Inventory[17]

The Salt Basin watershed has a number of certified National Cooperative Soil Survey (NCSS) inventories. The National Forests in New Mexico are not covered, but have soils information available through their Terrestrial Ecosystem Unit Inventories. These will be integrated with the National Cooperative Soil Survey (NCSS) Inventories in the next few years.

National Cooperative Soil Survey:

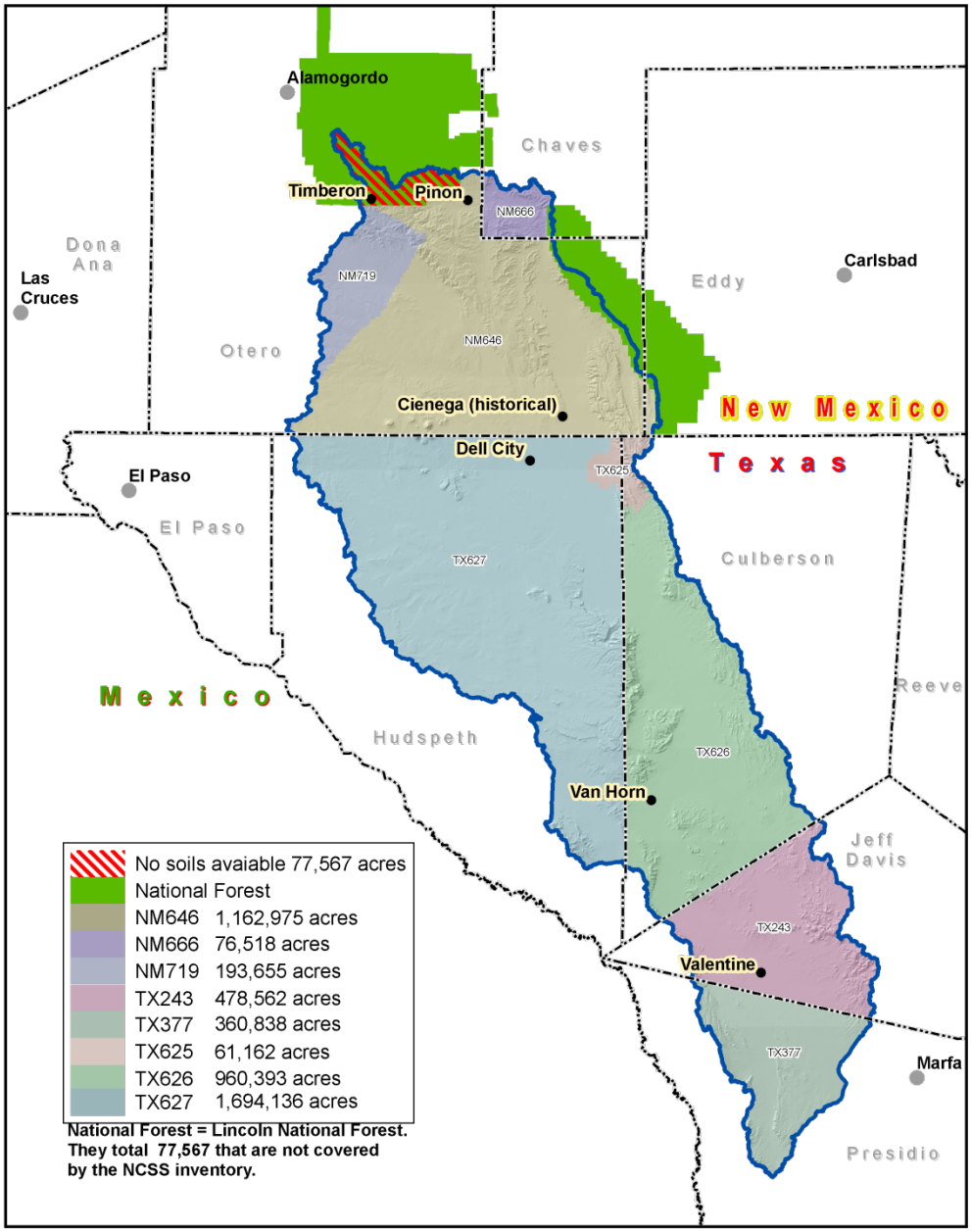
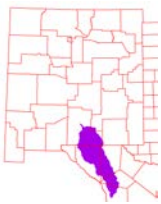


Figure 13. National Cooperative Soil Survey coverage of the Salt Basin Watershed.

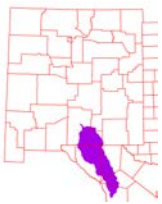


Soil Resource Inventory

In order to evaluate the susceptibility of erosion within the Upper Pecos-Black watershed, a model was developed using Soil Survey Geographic Database (SSURGO) information. The soil properties saturated hydraulic conductivity, soil loss tolerance, and wind erodibility group were used in conjunction with slope to assess soil map unit potential for erosion. Saturated hydraulic conductivity and slope are reported in SSURGO databases as interval/ratio data whereas wind erodibility and soil loss tolerance are ordinal data. Data transformations for the model are listed -

SSURGO Value	Nominal Description	Model Rank
Saturated Hydraulic Conductivity		
µm / s		
705.0 - 100.0	Very High	0
99.9 - 10.0	High	1
9.9 - 1.0	Moderately High	2
0.9 - 0.1	Moderately Low	3
0.09 - 0.01	Low	4
Slope %		
0 - 5		0
6 - 10		1
11 - 15		2
16 - 25		3
> 25		4
Soil Loss Tolerance		
5	High Tolerance For loss	0
4	↓	1
3	↓	2
2	↓	3
1	Low Tolerance For Loss	4
Wind Erodibility Group		
1	Very High	4
2	Very High	4
3	High	3
4	High	3
4L	High	3
5	Moderate	2
6	Moderate	2
7	Moderate	1
8	Slight	0

Table 10. Criteria Used for Soil Erosion Susceptibility Model.



Soil Resource Inventory

For each soil map unit (discrete delineation), the soil properties (named above) of the dominant soil type was used as the condition to be evaluated in the susceptibility to erosion model. Miscellaneous areas such as gravel pits, water, riverwash, etc. were excluded from evaluation. Possible range of values for each map unit are 0 – 16. Increasing values represent a higher susceptibility to soil erosion. Forest Service Soils are not included in the model at this time.

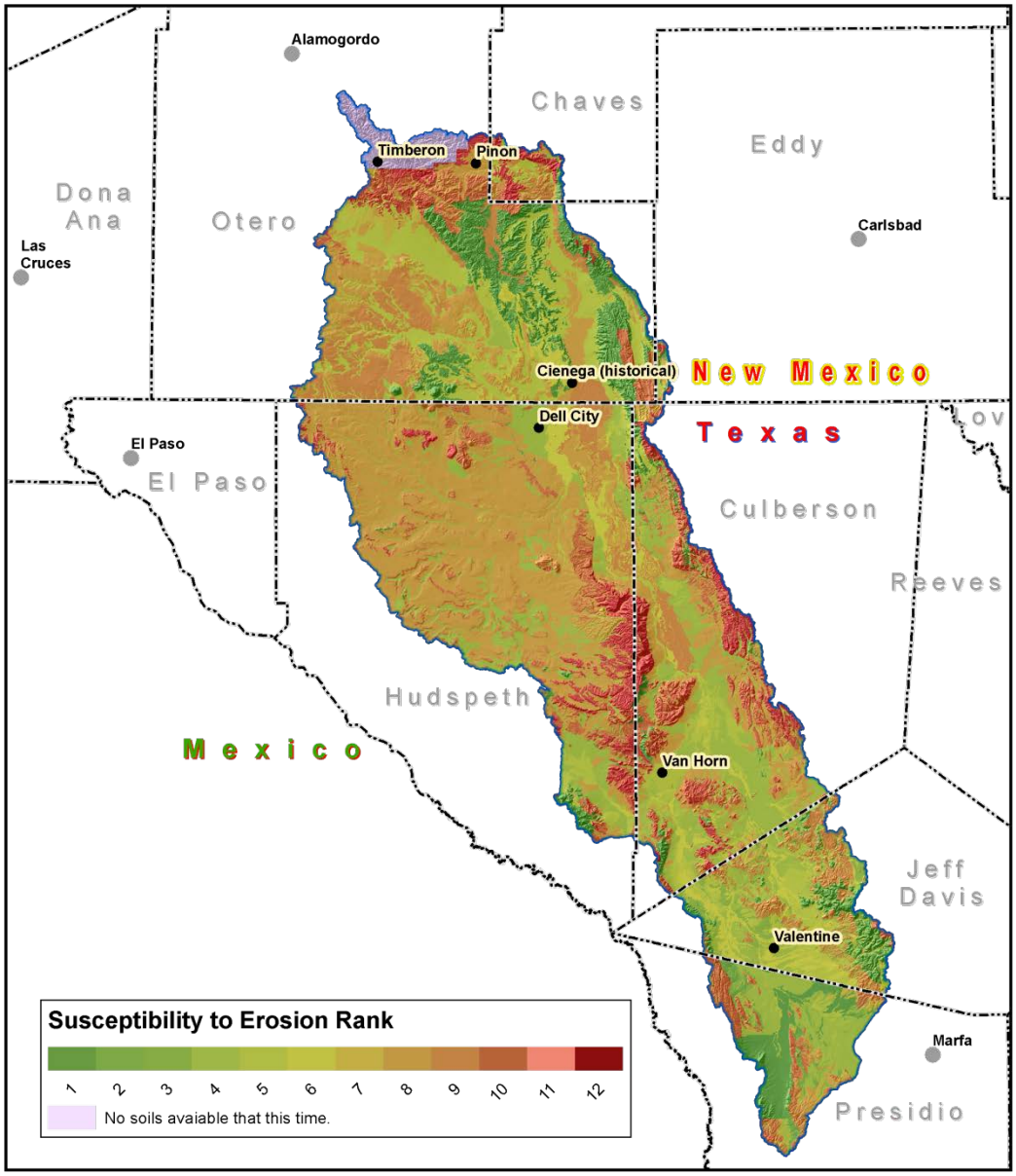
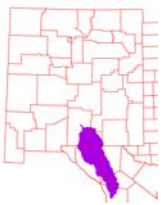


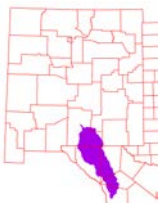
Figure 14. Salt Basin Watershed Erosion Potential.



Soil Resource Inventory

Rank	Acres
1	14,171
2	14,486
3	40,081
4	791,347
5	671,726
6	226,996
7	56,075
8	1,477,680
9	503,749
10	302,990
11	132,634
12	250,497
Sum(∑)	4,482,432

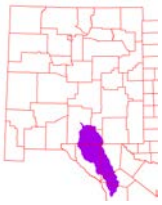
Table 11. Soil Erosion Potential Model Results. A greater rank indicates greater potential for erosion.



Socioeconomic Data [18]

COUNTY	Total population: Total	Total population: Urban	Total population: Rural	Total Pop,: Rural Farm	Total Pop.: Rural Nonfarm	Total population: Hispanic or Latino	Total population: White alone	Total population: Black or African American alone	Total population: American Indian and Alaska Native alone	Total population: Asian alone	Total population: Native Hawaiian and Other Pacific Islander alone	Total population: Some other race alone	Total population: Two or more races	Families: Median family income adj. 2009
Chaves, NM	61,382	47,176	14,206	1,044	13,162	26,904	44,167	1,209	694	323	34	1,019	13,042	40,301
Eddy , NM	51,658	38,836	12,822	675	12,678	20,023	39,438	805	646	231	47	9,129	1,362	54,824
Otero, NM	62,298	44,240	18,058	530	18,595	20,033	45,919	2,440	3,614	728	82	7,273	2,242	44,549
Culberson, TX	2,975	0	2,975	44	2,931	2,149	2,051	21	14	17	0	807	65	41,378
Hudspeth, TX	3,344	0	3,344	93	3,251	2,509	2,917	11	47	6	0	293	70	29,954
Jeff Davis, TX	2,207	0	2,207	80	2,207	783	1,998	20	7	2	0	114	66	45,750
Presidio, TX	7,304	4,168	3,136	64	3,112	6,162	6,205	20	20	6	1	984	68	39,141

Table 12. Socioeconomic Data of the Counties in the Salt Basin Watershed (2000).



References

1. Parameter-elevation Regressions on Independent Slopes Model (PRISM).PRISM is a unique knowledge-based system that uses point measurements of precipitation, temperature, and other climatic factors to produce continuous, digital grid estimates of monthly, yearly, and event-based climatic parameters. http://www.prism.oregonstate.edu/

2. Bureau of Land Management – New Mexico State Office. - http://www.blm.gov/nm/st/en/prog/more/geographic_sciences/spatial_data_metadata.html

3. UNITED STATES GEOLOGICAL SURVEY - National Land Cover Dataset. http://landcover.United States Geological Survey.gov/

4. Southwest Regional Gap Analysis Project (SWReGAP). http://earth.gis.usu.edu/swgap/

5. UNITED STATES GEOLOGICAL SURVEY – National Hydrography Dataset. http://nhd.United States Geological Survey.gov/

6. UNITED STATES GEOLOGICAL SURVEY - http://waterdata.usgs.gov/nwis/rt

7.. State of New Mexico Environment Department - ftp://ftp.nmenv.state.nm.us/www/swqb/303d-305b/2010/USEPA-Approved303dList.pdf

8. United States Environmental Protection Agency - http://cfpub.epa.gov/surf/huc.cfm?huc_code=13050004

9. New Mexico - Office of the State Engineer- http://www.ose.state.nm.us/water_info_data.html

10.. Texas Commission on Environmental Quality - http://www.tceq.texas.gov/

11.. New Mexico Natural Heritage Program - http://nhnm.unm.edu/

12. Texas Parks & Wildlife Department - http://www.tpwd.state.tx.us/

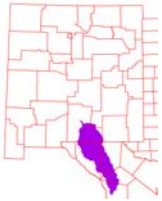
13. Southwest Exotic Plant Mapping Program - http://www.invasiveweeds.com/mapping/welcome.html

14. Texas Invasives - http://www.texasinvasives.org/

15. Natural Resources Conservation Service – National Coordinated Common Resource Area (CRA) Geographic Database http://soils.usda.gov/survey/geography/cra.html

16. Natural Resources Conservation Service – Performance Results System http://ias.sc.egov.usda.gov/PRSHOME/

17. Natural Resources Conservation Service – Soil Data Mart http://soildatamart.nrcs.usda.gov/



18. United States Census Bureau - http://factfinder.census.gov/home/saff/main.html?_lang=en