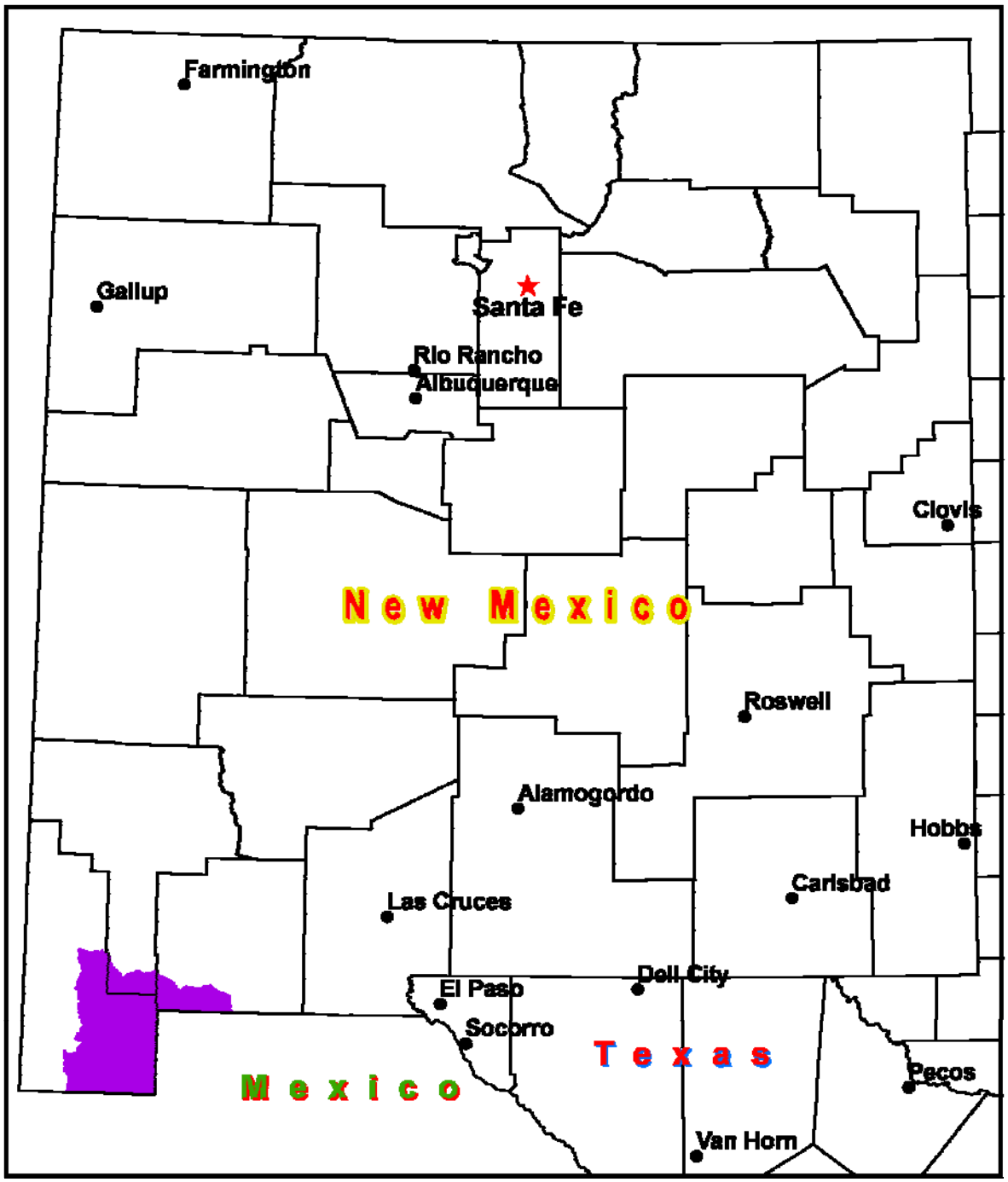
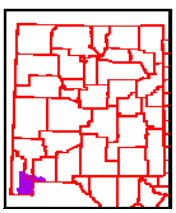
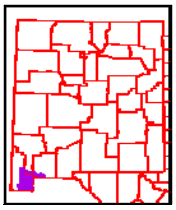


Rapid **W**atershed **A**ssessment
Playas Lake Watershed





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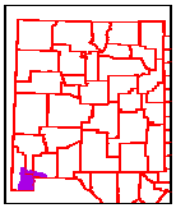
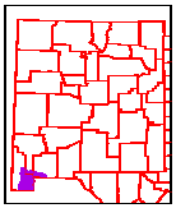




Overview

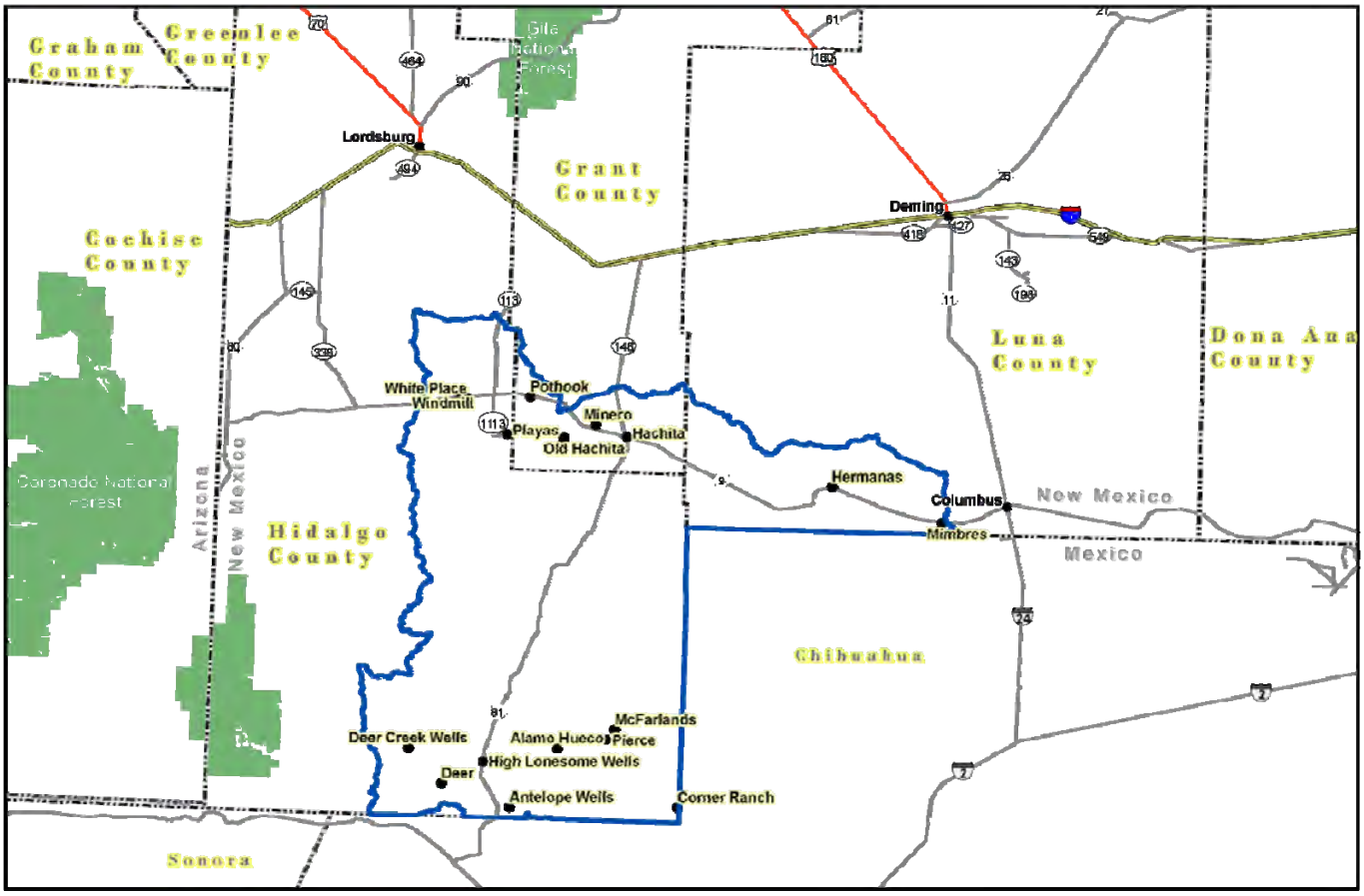
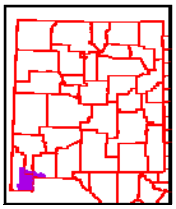


Figure 1. Playas Lake Watershed Overview.

Overview

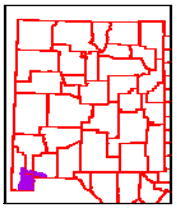


The Playas Lake Watershed is located in extreme southwestern New Mexico (the “boot heel”) and to the south of New Mexico in the Republic of Mexico. The New Mexico portion covers 1,075,926 total acres (4,354 sq. km). Portions of the Playas Lake watershed are in Grant, Hidalgo and Luna counties. Table 1 summarizes the distribution of the Playas Lake Watershed in New Mexico.

County	County Acres Total	Acres in HUC	% of HUC in County	% of County in HUC
Grant	2,543,499	101,371	9%	4%
Hidalgo	2,210,383	808,056	75%	37%
Luna	1,899,441	166,496	15%	9%
Sum (∑)	--	1,075,926	100	--

Table 1. Playas Lake Watershed acreage distribution.

Physical Setting



Geology:

The southwestern part of New Mexico is characterized by the Mexican Highland Section of the Basin and Range physiographic province. The mountains and hills are north to north-west trending fault blocks with pediments that grade into broad, gently-sloping bajadas which extend many miles to basin center closed or nearly closed playas. Rock units are aged from the Pre-Cambrian to the Recent with the exception of the Triassic and Jurassic Periods. Many of the mountain ranges contain historic mining districts for copper-lead-zinc-silver-tungsten deposits.

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 quality ranges from good to poor for livestock or crops.

In addition gully erosion on the steeper slopes leads to dissection of the landscape, dewatering of the adjacent land causing a change in plant species, and sedimentation of flatter lands. Wind erosion when the playas dry out cause dust storms that effect health and vehicular traffic.

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.

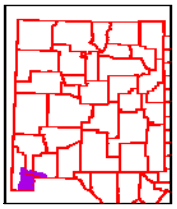
The soils in the Playas Lake Watershed are assigned to four groups (A, B, C, and D).

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.

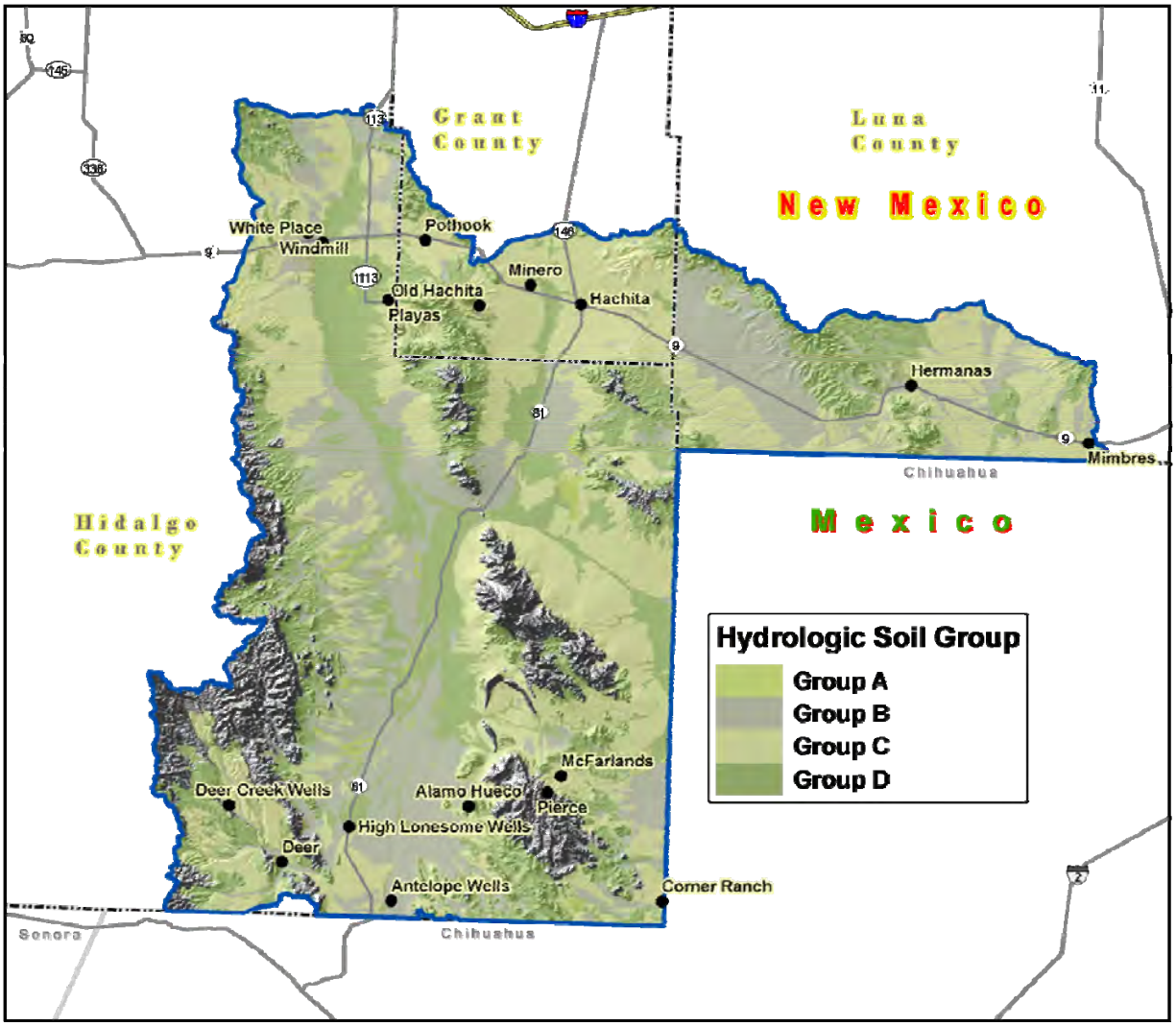


Figure 2. Playas Lake Watershed Hydrologic Soil Group.

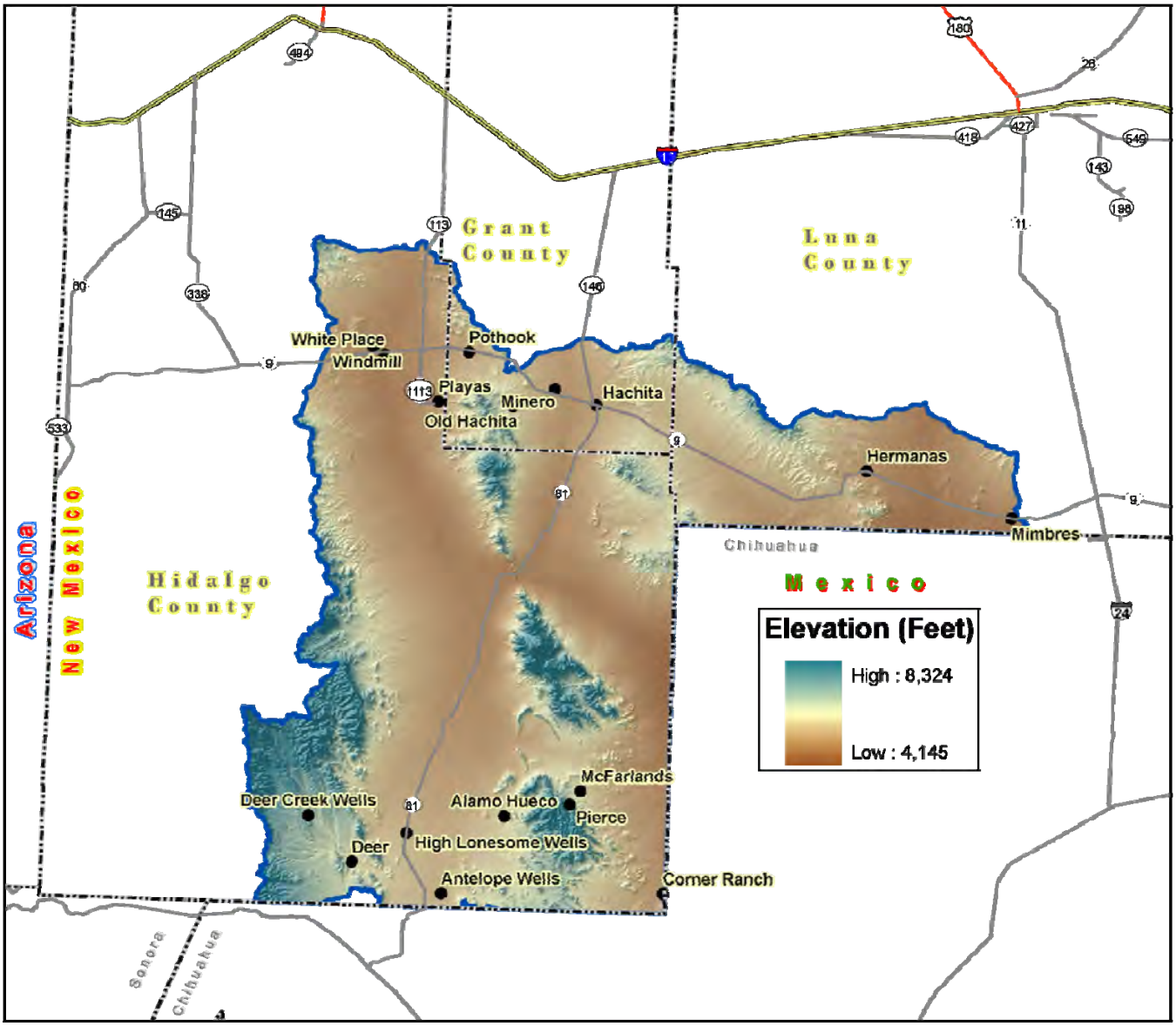
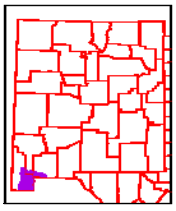


Figure 3. Playas Lake Watershed Shaded Relief.



Precipitation [1]

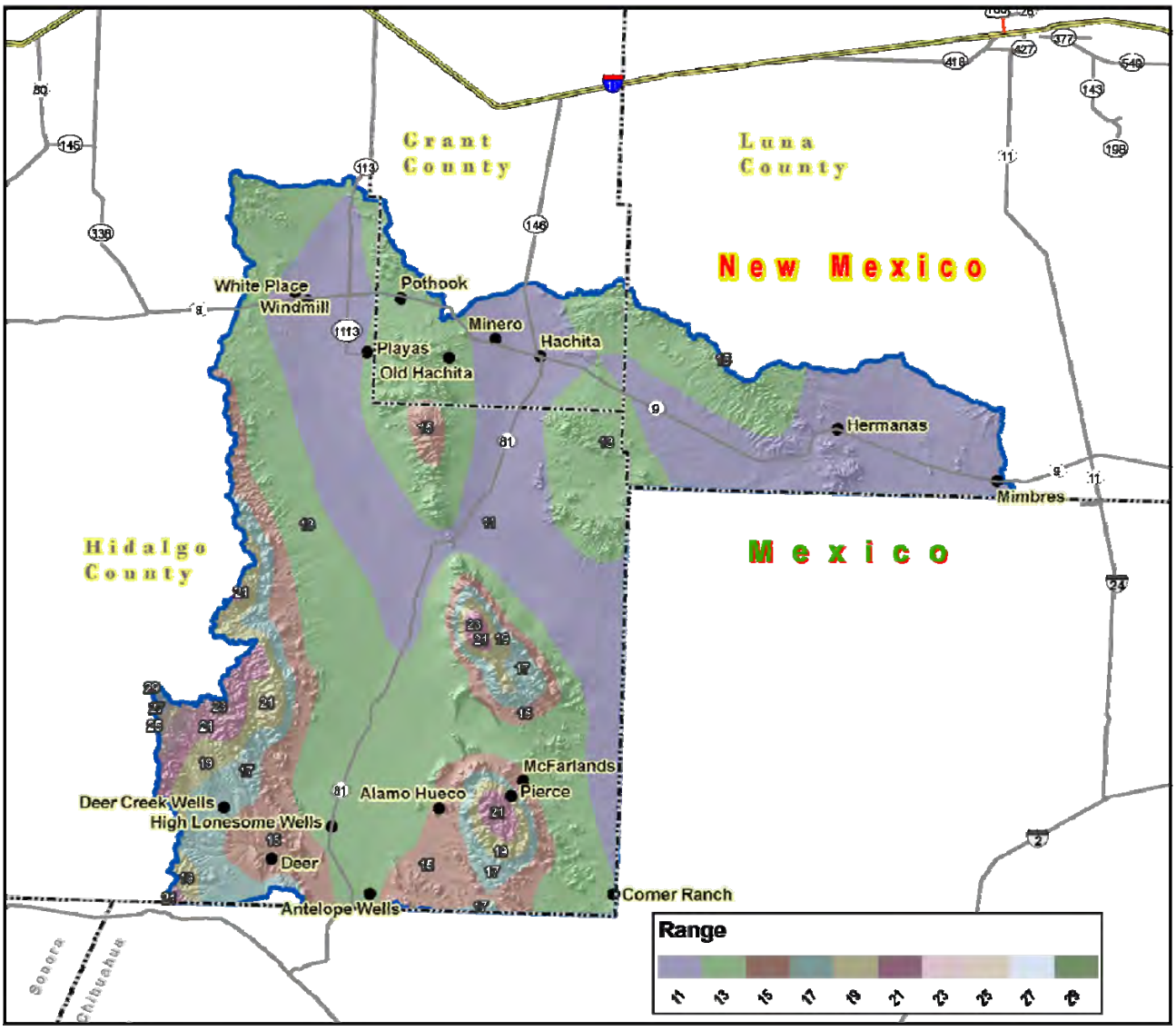


Figure 4. Playas Lake Watershed Annual Precipitation.

Land Ownership [2]

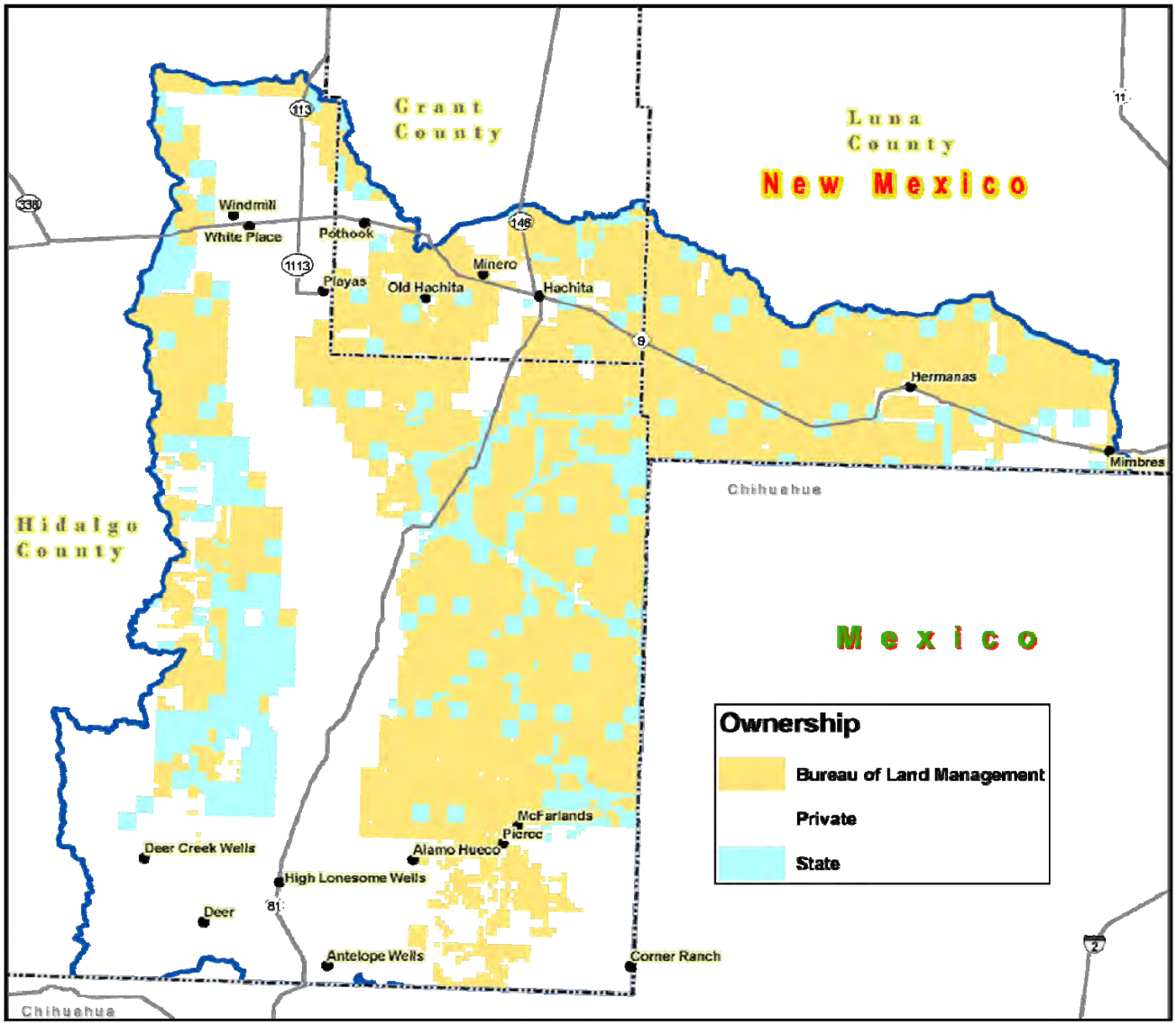
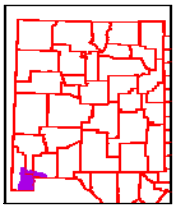


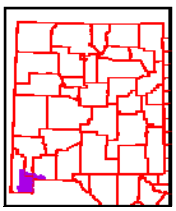
Figure 5. Playas Lake Watershed Land Ownership.



Land Ownership

COUNTY	BLM	Private	State
Grant	63,650	26,444	11,276
Hidalgo	301,310	390,185	116,433
Luna	130,312	15,998	20,141
Watershed (∑)	495,273	432,628	147,849
% Watershed	46%	40%	14%

Table 2. Land Ownership in the Playas Lake Watershed.



Land Use / Land Cover [3,4]

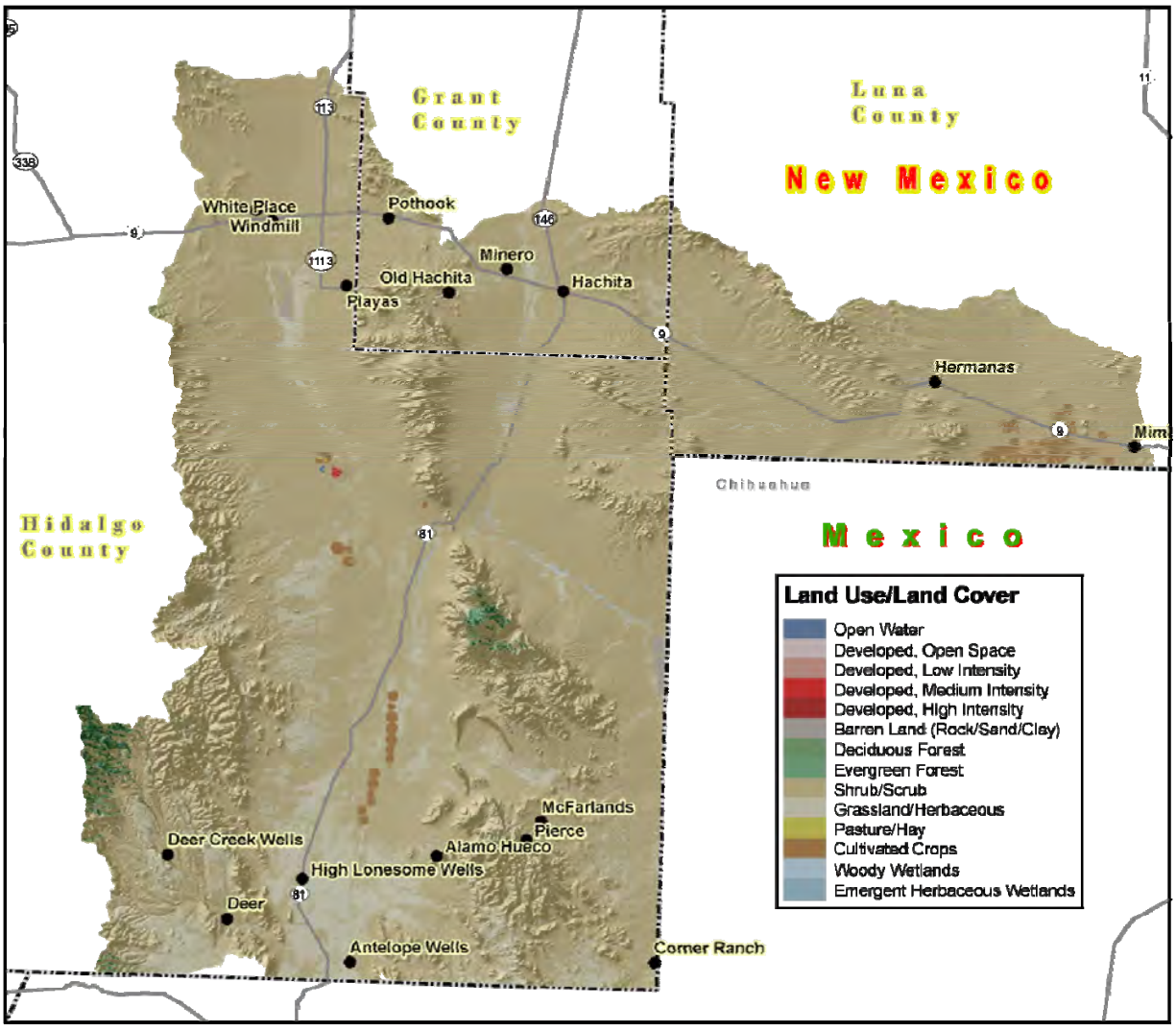
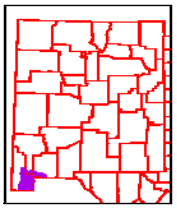


Figure 6. Subset of the National Land Cover Dataset in the Playas Lake Watershed.

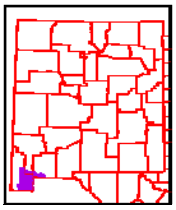


Land Use / Land Cover

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.

Land Use/ Land Cover	Acres	% of Watershed
Shrub/Scrub	945,201	88
Herbaceuous	107,425	10
Cultivated Crops	7,939	1
Evergreen Forest	7,360	1
Developed, Open Space	3,420	< 1
Barren Land	2,105	< 1
Woody Wetlands	1,401	< 1
Mixed Forest	224	< 1
Developed, Low Intensity	213	< 1
Developed, Medium Intensity	128	< 1
Hay/Pasture	105	< 1
Open Water	62	< 1
Developed, High Intensity	29	< 1

Table 3. Extent of NLCD classes in the Playas Lake Watershed.



Land Use / Land Cover

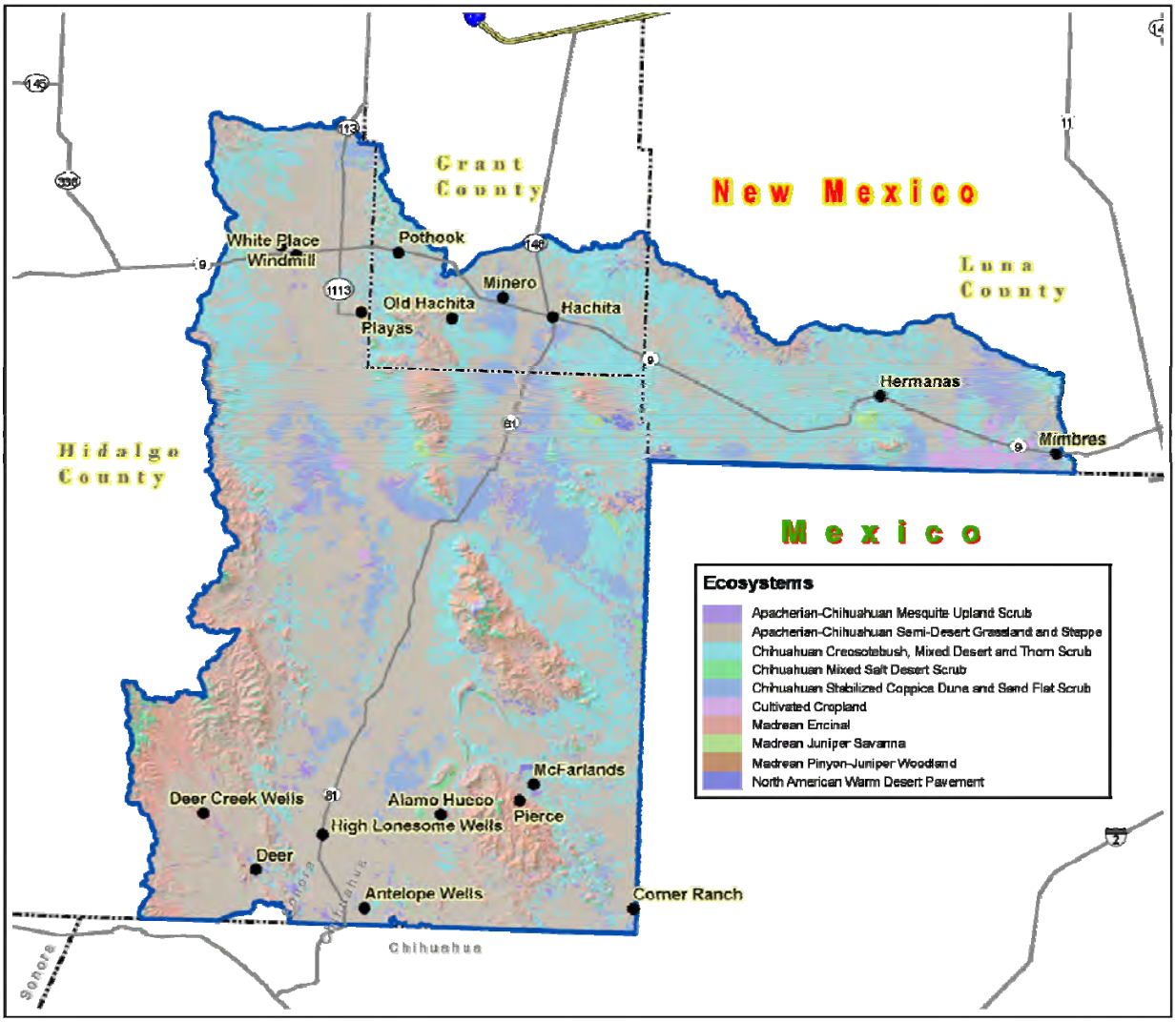
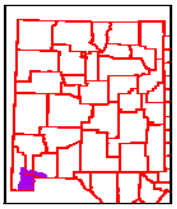


Figure 7. Subset of the SWREGAP over the Playas Lake Watershed. The 10 dominant ecosystems are displayed in the legend.



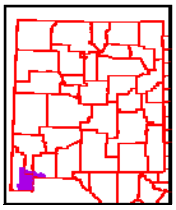
Land Use / Land Cover

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	577,501	54
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	255,064	24
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	81,121	8
Madrean Encinal	69,421	6
Apacherian-Chihuahuan Mesquite Upland Scrub	28,451	3
Madrean Pinyon-Juniper Woodland	16,145	2
Chihuahuan Mixed Salt Desert Scrub	12,240	1
Cultivated Cropland	7,154	1
North American Warm Desert Pavement	6,485	1
Madrean Juniper Savanna	5,999	1

Table 4. SW Region Gap analysis ecosystem acreages.

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



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 5,446 miles (8,763 km) of water courses in the Playas Lake Watershed. The majority of these courses typically flow intermittently in summer months during periods associated with high intensity convective thunderstorms.

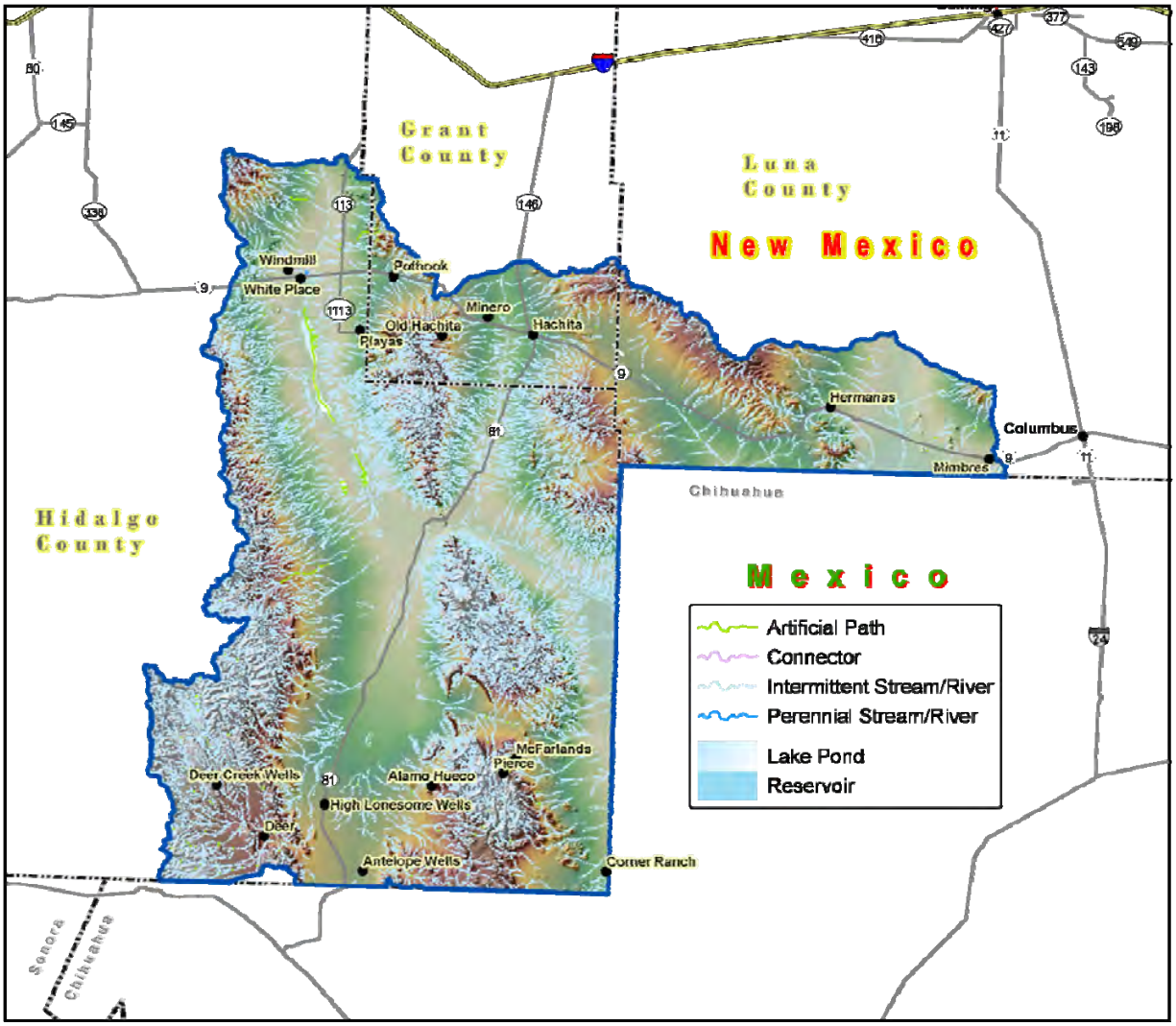
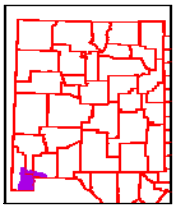


Figure 8. National Hydrologic Dataset (NHD) of the Playas Lake Watershed.



Water Course Type	Miles
Artificial Path	36
Connector	1
Intermittent Stream / River	5,408
Perennial Stream / River	1
Sum (∑)	5,446

Table 5. NHD Water Course Type and Extents

Hydrology

Gauging Stations:

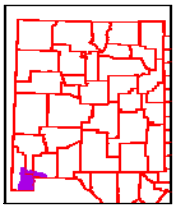
There are no Gauging stations for this watershed

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 impaired waters for this watershed.



Hydrology

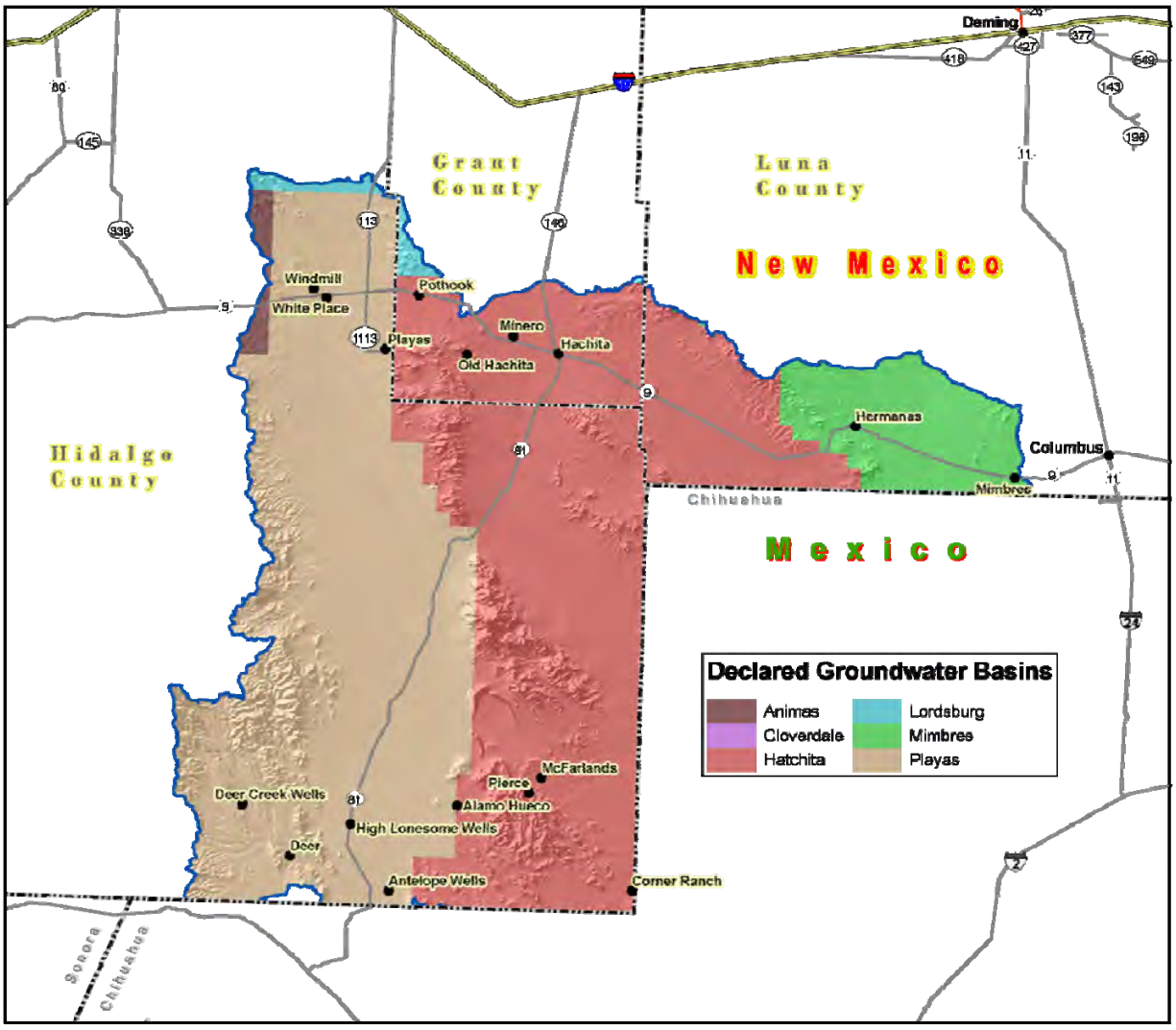
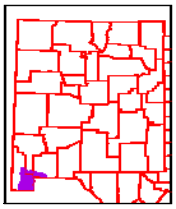


Figure 9. Declared Groundwater Basins of the Playas Lake.

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 six declared groundwater basins in the Playas Lake Watershed: Animas, Cloverdale, Hatchita, Lordsburg, Mimbres and Playas. The surface watershed in NM covers 1,075,739 of the approximately million acres of the 6.25 million acres of the underground water basins in NM.

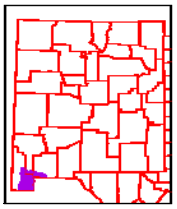


Threatened and Endangered Species [10]

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 program tracks 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 Playas Lake Watershed.

Common Name	Scientific Name	Tax Class	Family	Federal Status	State Status
Arizona Grasshopper Sparrow	*Ammodramus savannarum ammolegus*	Aves	Emberizidae		E
Baird's Sparrow	*Ammodramus bairdii*	Aves	Emberizidae		T
Chihuahua Chub	*Gila nigrescens*	Actinopterygii	Cyprinidae	LT	E
Chiricahua Leopard Frog	*Rana chiricahuensis*	Amphibia	Ranidae	LT	
Desert Bighorn Sheep	*Ovis canadensis mexicana*	Mammalia	Bovidae		T
Desert Night-blooming Cereus	*Peniocereus greggii var. greggii*	Dicotyledoneae	Cactaceae		E
Gila Woodpecker	*Melanerpes uropygialis*	Aves	Picidae		T
Hacheta Grande Woodlandsnail	*Ashmunella hebardi*				T
Mexican Wolf	*Canis lupus baileyi*	Mammalia	Canidae		E
New Mexico Ridgenose Rattlesnake	*Crotalus willardi obscurus*	Reptilia	Viperidae	LT	E
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	Aves	Falconidae	LE	E
Organ Mountain Foxtail-cactus	*Escobaria organensis*	Dicotyledoneae	Cactaceae		E
Shortneck Snaggletooth	*Gastrocopta dalliana dalliana*				T
Southern Pocket Gopher	*Thomomys umbrinus*	Mammalia	Geomyidae		T
Thick-billed Kingbird	*Tyrannus crassirostris*	Aves	Tyrannidae		E
Western Yellow Bat	*Lasiurus xanthinus*	Mammalia	Vespertilionidae		T
White-sided Jackrabbit	*Lepus callotis*	Mammalia	Leporidae		T

Table 6. Threatened and Endangered Plant and Animal Species.

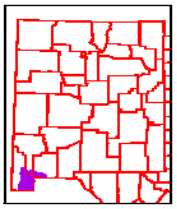


Invasive Species [11]

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 Playas Lake Watershed, the SWEMP has identified 5 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)	**Dalmatian Toadflax**
Brassicaceae (Mustard Family)	**Hoary Cress (Whitetop)**
Lythraceae (Loosestrife Family)	***Purple Loosestrife***
Asteraceae (Sunflower Family)	***Yellow Starthistle***

Table 7. Invasive Species Recognized by the SWEMP.



Common Resource Areas [12]

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.

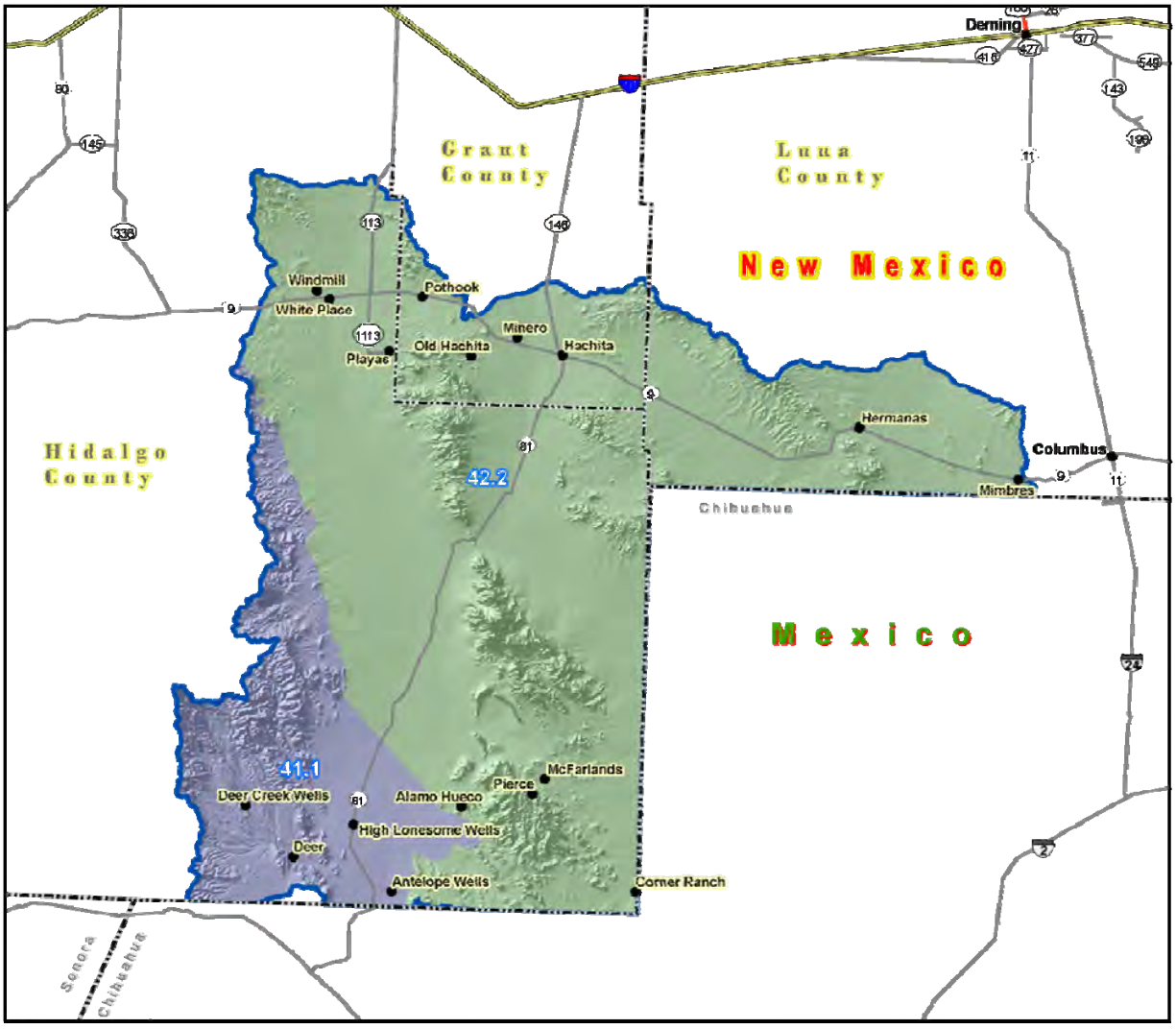
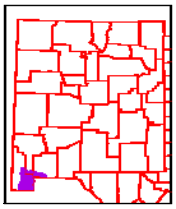


Figure 10. Common Resource Areas of the Playas Lake Watershed.



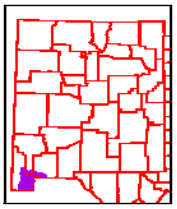
Common Resource Areas

41.1 - Mexican Oak-Pine Forest and Oak Savannah

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 4500 to 10,700 feet. Precipitation ranges from 16 to 30 inches per year. The soil temperature regime ranges from thermic to mesic. The soil moisture regime ranges from aridic ustic to typic ustic. Vegetation includes Emory oak and Ponderosa pine.

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.



Conservation [13]

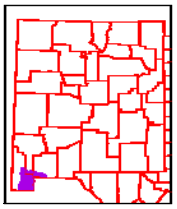
The USDA-Natural Resources Conservation Service (NRCS) focuses on the development and delivery of high quality products and services that enable people to be good stewards of our Nation's soil, water, and related natural related resources on non-Federal lands. The Natural Resources Conservation Service's 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	2007		2008		2009		2010		2011		TOTAL	
	#	Acres	#	Acres	#	Acres	#	Acres	#	Acres	#	Acres
Brush Management					1	23,073	1	135,067			2	158,140
Conservation Crop Rotation	1	122					1	65	1	496	3	683
Integrated Pest Management	1	122					1	590	1	496	3	1,208
Irrigation System, Microirrigation	1	210	1	79			1	103	2	122	5	513
Nutrient Management	1	122					1	590	1	496	3	1,208
Prescribed Grazing	1	122					1	590	1	496	3	1,208
Residue Management, Seasonal	2	18,090	3	178,659	1	80	1	18,414	1	9,207	8	224,449
Upland Wildlife Habitat Management	1	122					1	590	1	496	3	1,208
SUM (∑)	1	5,696	2	163,457	1	80	2	138,513	1	9,287	7	317,033

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

Conservation Practice	2007		2008		2009		2010		2011		TOTAL	
	#	Feet	#	Feet	#	Feet	#	Feet	#	Feet	#	Feet
Fence					1	5,107	1	11,432	1	135,067	3	151,606
Pipeline			1	92,505	1	129,919	1	411,939			3	634,363
SUM (∑)			1	92,505	2	135,026	2	423,371	1	135,067	6	785,968

Table 9. 5 Year Trends in Location Specific Applied Conservation Practices. Reported in Feet if Linear.



Soil Resource Inventory [14]

The Playas Lake Watershed has a number of certified National Cooperative Soil Survey (NCSS) inventories. Soils data is available from the NRCS Soil Data Mart at http://soildatamart.nrcs.usda.gov/ and/or the NRCS Geospatial Data Gateway at http://datagateway.nrcs.usda.gov .

National Cooperative Soil Survey:

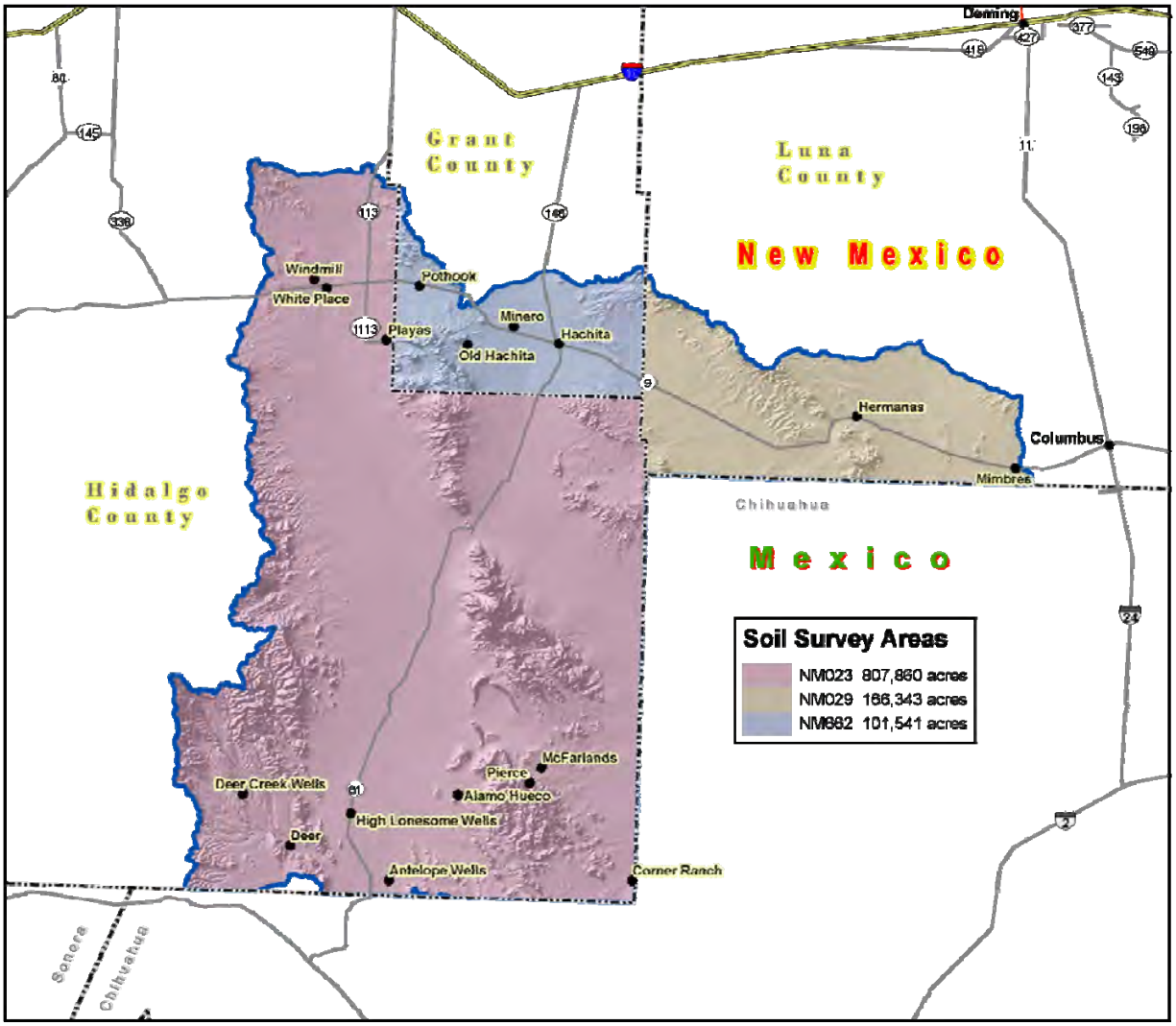
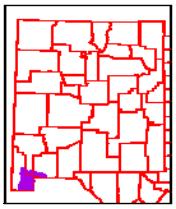


Figure 11. National Cooperative Soil Survey coverage of the Playas Lake Watershed.

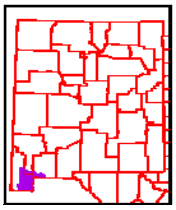


Soil Resource Inventory

In order to evaluate the susceptibility of erosion within the Playas Lake 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.

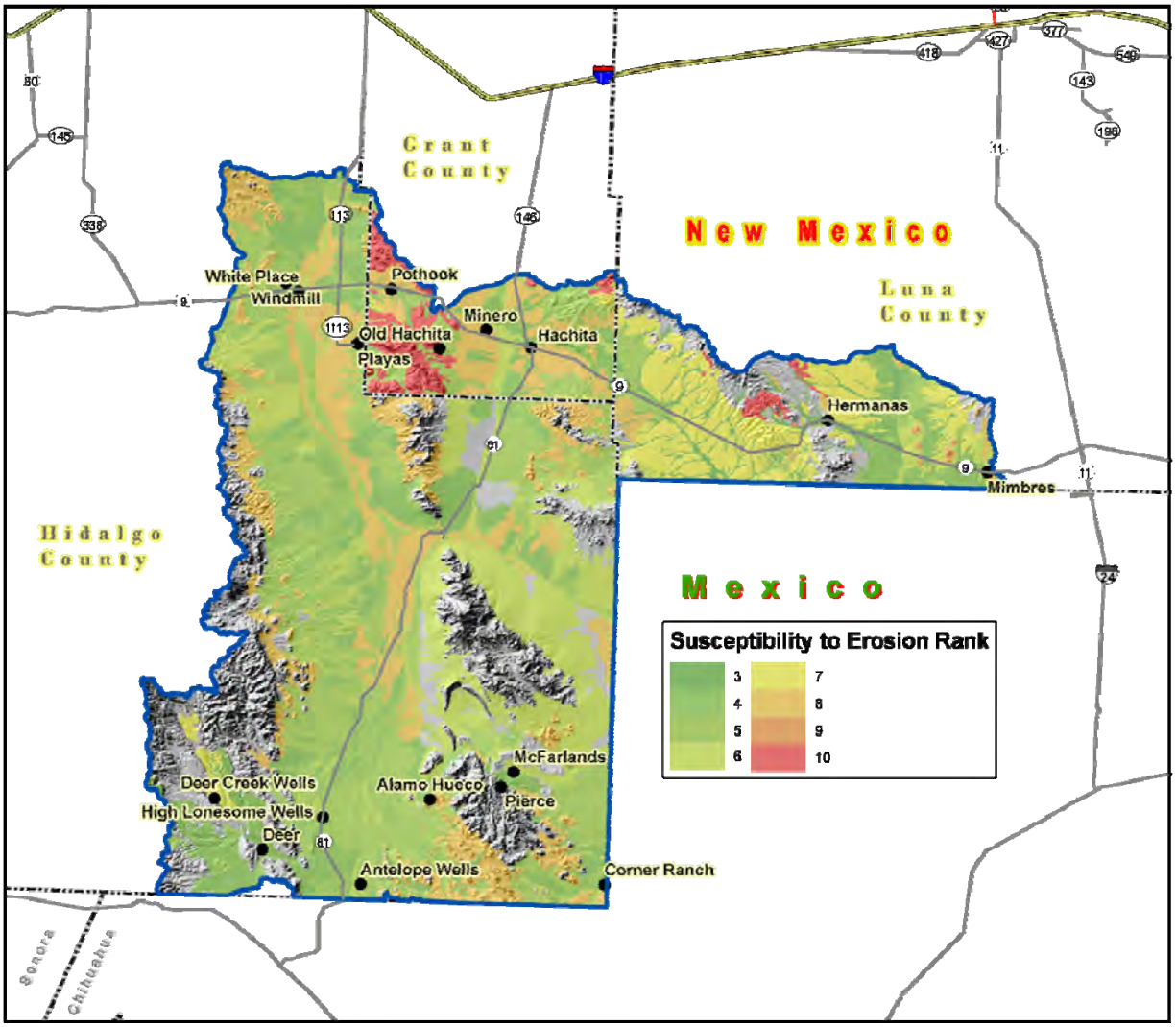
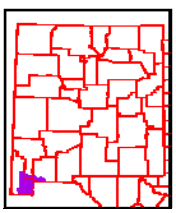


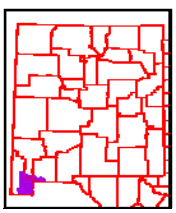
Figure 12. Playas Lake Watershed Erosion Potential.



Soil Resource Inventory

Rank	Acres
3	18,187
4	167,188
5	248,895
6	144,736
7	71,663
8	170,376
9	1,088
10	27,779
Sum(∑)	849,912

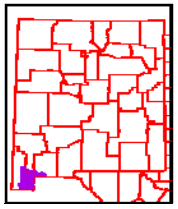
Table 11. Soil Erosion Potential Model Results. A greater rank indicates greater potential for erosion.



Socioeconomic Data 2010 [15]

COUNTY	Total population: Total	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. 2010
Grant	29,514	14,252	25,058	255	400	123	22	2,837	819	44,360
Hidalgo	4,894	2,769	4,177	29	41	23	2	536	86	41,594
Luna	25,095	15,423	19,511	288	317	119	19	4,176	665	33,312

Table 10. Socioeconomic Data of the Counties in the Watershed (2010).



References

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

15. United States Census Bureau - http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml