

Rapid Watershed Assessment Landreth-Monument Draws Watershed



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Overview

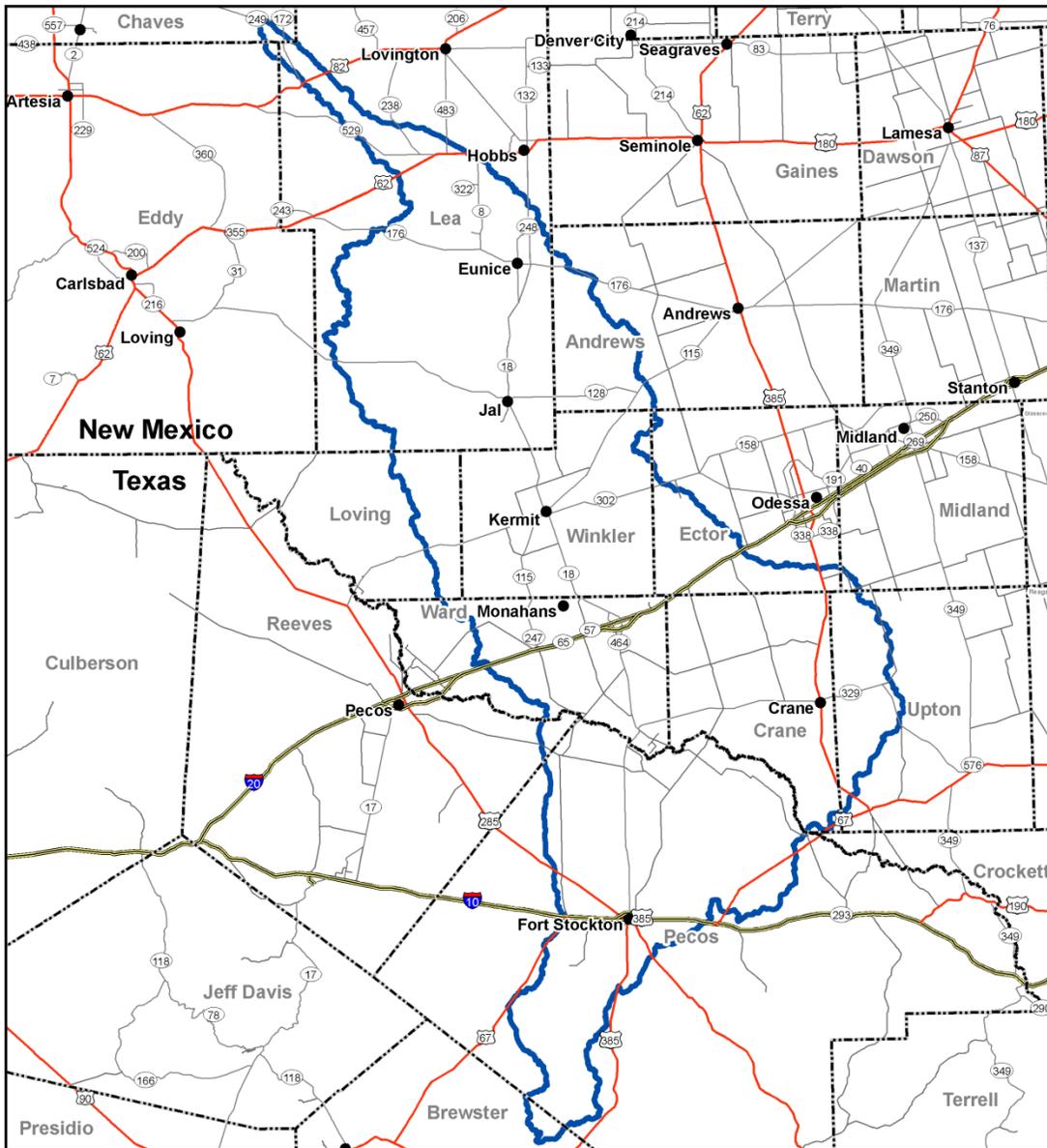


Figure 1. Landreth-Monument Draws Watershed Overview.



Overview

The Landreth-Monument Draws Watershed is located in southeastern New Mexico and in northwestern-central part of Texas. It covers 4,056,675 total acres (16,417 sq. km). Portions of the Landreth-Monument Draws Watershed are in the Chaves, Eddy, and Lea counties in New Mexico and Andrews, Brewster, Crane, Ector, Loving, Midland, Pecos, Reeves, Upton, Ward, and Winkler counties in Texas. Table 1 summarizes the distribution of the Landreth-Monument Draws Watershed.

County	County Acres Total	Acres in HUC	% of HUC in County	% of County in HUC
Chaves, NM	3,885,365	6,511	< 1	< 1
Eddy , NM	2,684,668	2,976	< 1	< 1
Lea , NM	2,811,518	979,403	24	35
Andrews, TX	961,118	172,694	4	18
Brewster, TX	3,963,723	14,214	< 1	< 1
Crane, TX	503,010	497,556	12	99
Ector, TX	578,458	181,207	4	31
Loving, TX	432,707	110,782	3	26
Midland ,TX	577,985	4,605	< 1	1
Pecos, TX	3,049,828	984,732	24	32
Reeves, TX	1,691,170	15,466	< 1	1
Upton, TX	796,322	167,958	4	21
Ward, TX	534,894	386,879	10	72
Winkler, TX	537,786	531,779	13	99
Sum (Σ)	--	4,056,675	100	--

Table 1. Landreth-Monument Draws Watershed acreage distribution.



Physical Setting

Geology:

The HUC has a northwest boundary just southeast of the intersection of State Route 249 and Mescalero Ridge in Chaves County. The northern boundary proceeds southeastward then turns eastward just west of the Chaves-Eddy-Lea County corner; crosses State Route 238 just south of Buckeye proceeding southeastward; passes south of Nadine crossing State Route 18 near McCasland Road; proceeds to Whelan Lake southwest of Frankel City in Andrews County Texas; turns southward to cross State Route 302 just west of Notrees; proceeds southeastward to cross Interstate 20 and Farm Road 1866 just west of Douro; circles north and east of Pleasant Farms; proceeds southward on Farm to Market Road 1492; turns southwestward at State Route 329 and County Road 300; and proceeds to Soda Lake northwest of McCamey. The southern boundary proceeds southeastward following the edge of Mescalero Ridge; crosses the intersection of State Highway 249 and U.S. Highway 82; crosses U.S. Highways 62 and 180 halfway between Marathon Road and Willow Tree Road; turns south- and southwestward to cross at the intersection of Marathon Road and State Road 176; proceeds westward to Hat Mesa; proceeds southward near Comanche Wells; proceeds to State Route 128 just west of Cotton Place; heads southeastward east of Red Hill to Rattlesnake flat where it crosses into Texas; crosses State Route 302 just east of Anderson Ranch Road in Loving County; proceeds eastward and northeastward to cross State Road 115 in Winkler County just south of the town of Wink and north of Little Joe Road; continues southeastward through the town of Wickett; crosses State Route 18 north of County Road 338 north of the town of Royalty; passes around Horsehead Crossing on the Pecos River to Soda Lake.

The watershed consists of Quaternary eolian and piedmont deposits. The Tertiary Ogallala formation occasionally outcrops. Other ridges are formed by Cretaceous Period limestones and Triassic Period shales and sandstones. Alkali flats are also present.

The area contains many oil fields.

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 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 Landreth-Monument Draws 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. Landreth-Monument Draws Watershed Hydrologic Soil Group.



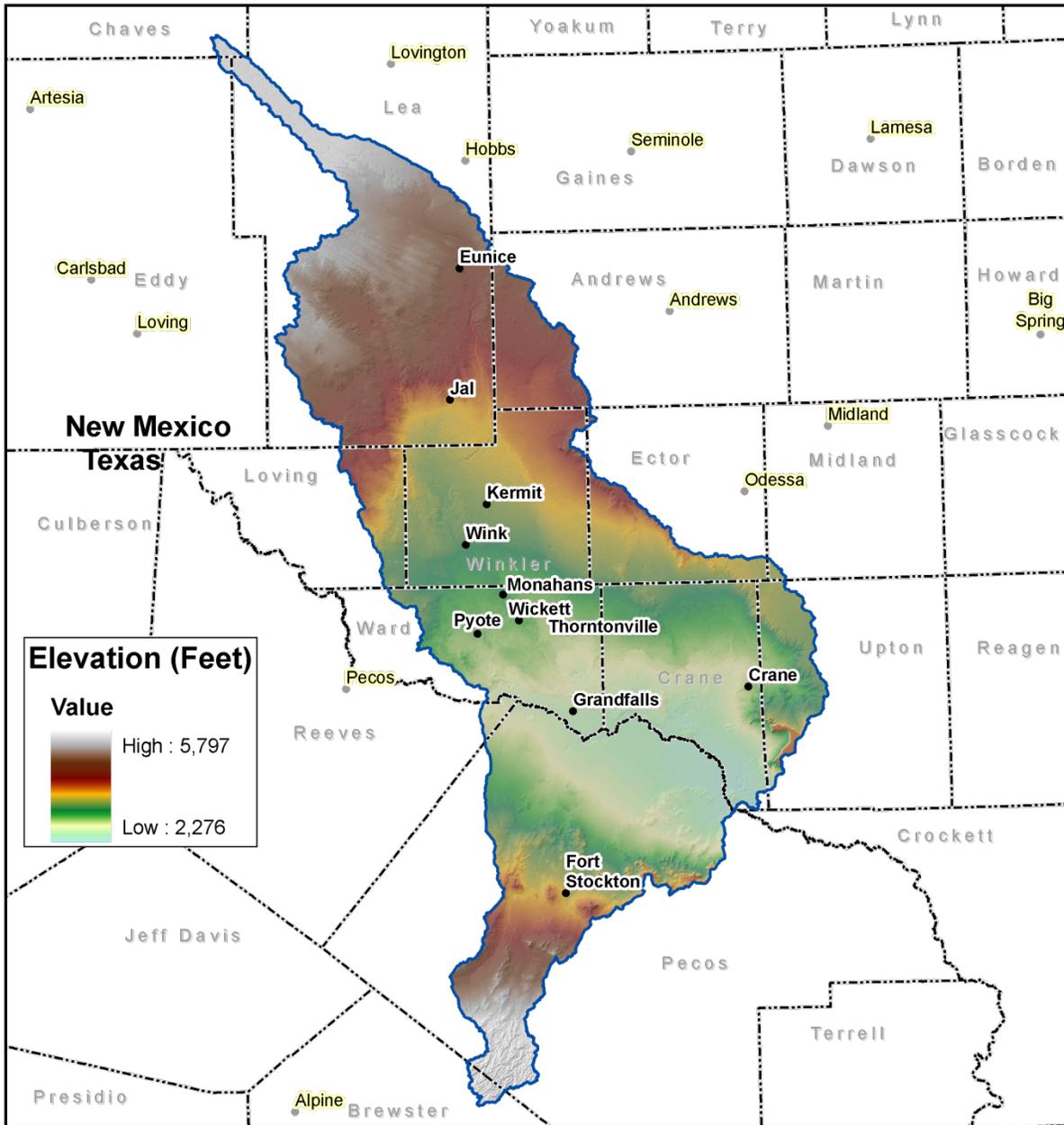


Figure 3. Landreth-Monument Draws Watershed Shaded Relief.



Land Ownership²

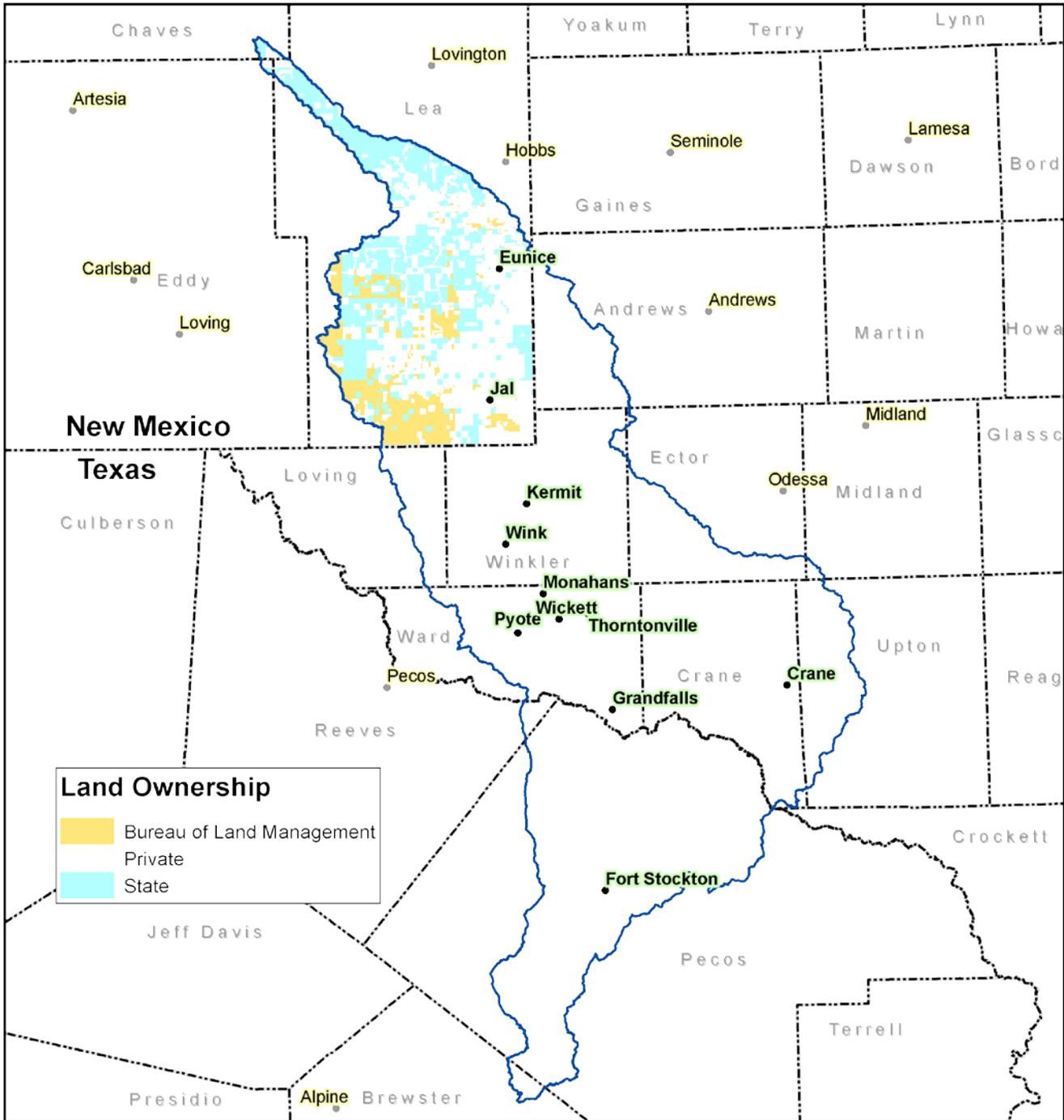


Figure 5. Landreth-Monument Draws Watershed Land Ownership.



Land Ownership

<u>County</u>	<u>BLM</u>	<u>Private</u>	<u>State</u>
Chaves, NM	218	2,299	7,986
Eddy , NM	49	4,053	1,718
Lea , NM	1,277,087	1,574,729	875,600
Andrews, TX		172,642	
Brewster, TX		14,214	
Crane, TX		497,556	
Ector, TX		362,414	
Loving, TX		110,779	
Midland ,TX		4,605	
Pecos, TX		984,732	
Reeves, TX		15,466	
Upton, TX		15,466	
Ward, TX		386,879	
Winkler, TX		531,764	
Watershed (Σ)	1,277,354	4,830,089	885,305
% Watershed	31	119	22

Table 2. Land Ownership in the Landreth-Monument Draws Watershed.



Land Use / Land Cover ^{3,4}

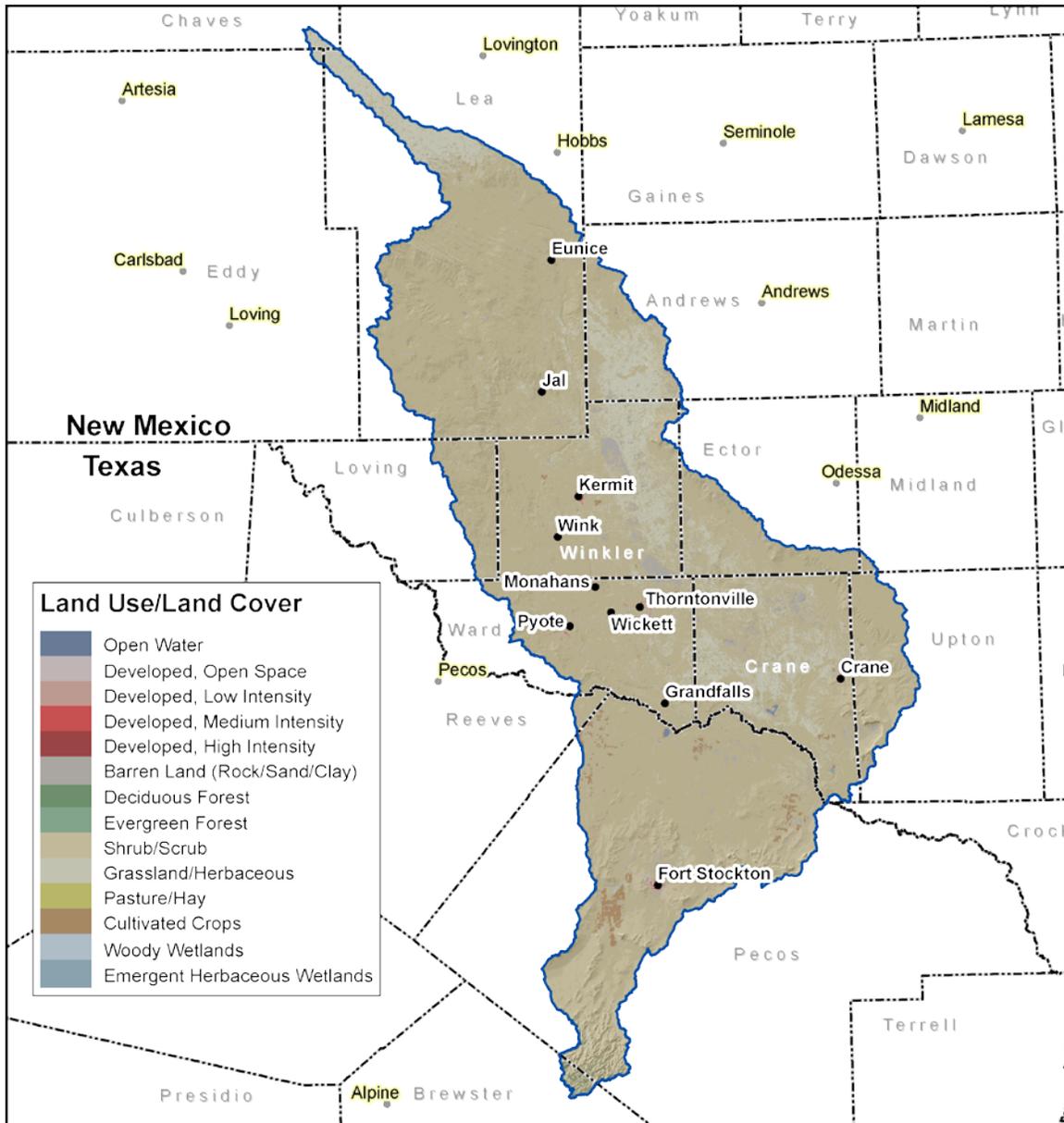


Figure 6. Subset of the National Land Cover Dataset in the Landreth-Monument Draws Watershed.



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.

<u>Ecosystem</u>	<u>Acres</u>	<u>% of Watershed</u>
Shrub/Scrub	3,423,829	84
Grassland/Herbaceous	456,602	11
Barren Land (Rock/Sand/Clay)	70,048	2
Developed, Open Space	55,173	1
Cultivated Crops	30,452	1
Developed, Low Intensity	9,383	< 1
Evergreen Forest	3,456	< 1
Developed, Medium Intensity	2,454	< 1
Open Water	2,130	< 1
Emergent Herbaceous Wetlands	1,563	< 1
Woody Wetlands	1,322	< 1
Developed, High Intensity	403	< 1
Mixed Forest	30	< 1
Deciduous Forest	12	< 1

Table 3. Extent of NLCD classes in the Landreth-Monument Draws Watershed.



Land Use / Land Cover

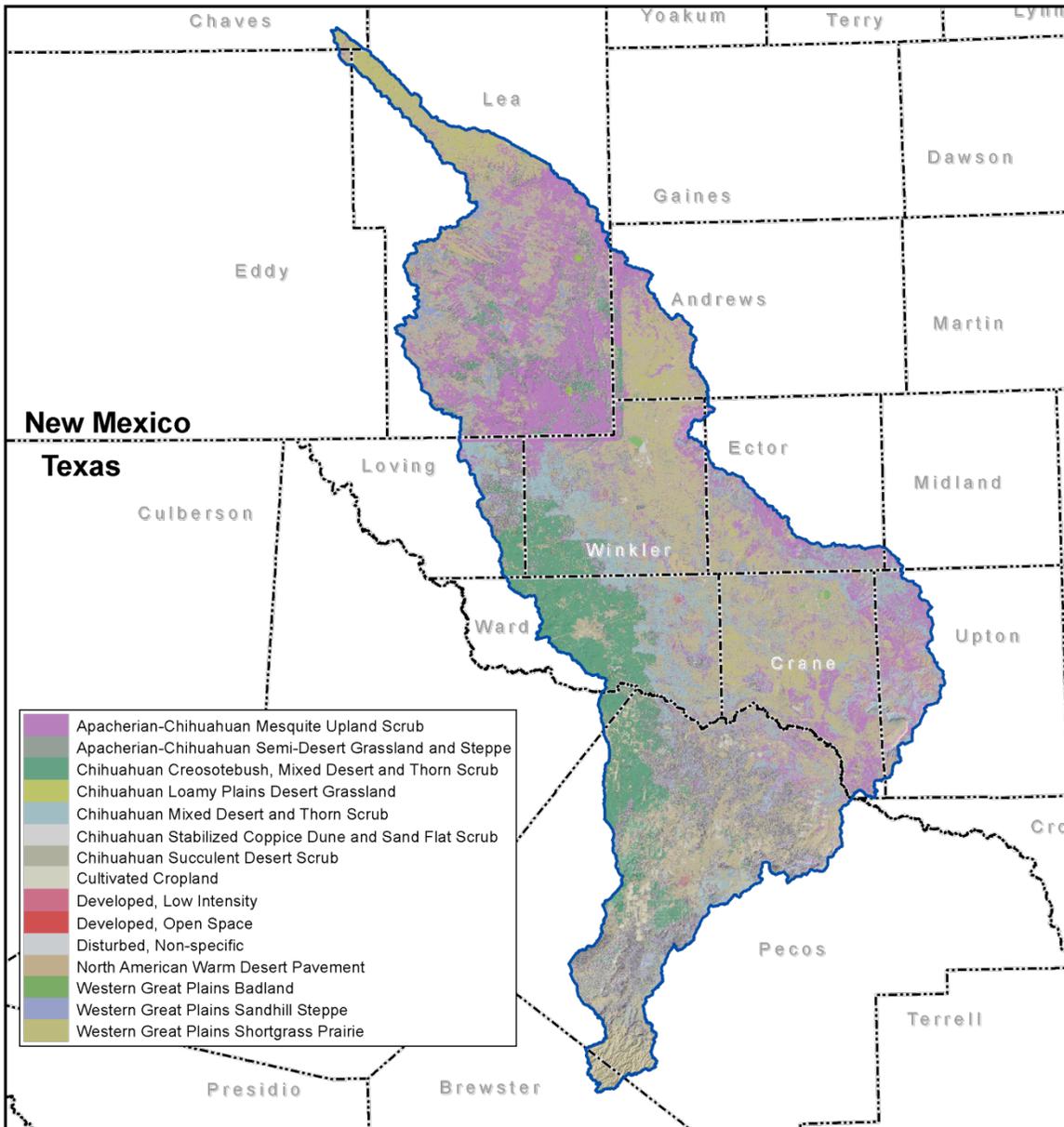


Figure 7. Subset of the SWREGAP over the Landreth-Monument Draws Watershed. The 15 dominant ecosystems are displayed in the legend.



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 Mesquite Upland Scrub	1,543,657	38
Chihuahuan Mixed Desert and Thorn Scrub	749,879	18
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	748,914	18
Western Great Plains Sandhill Steppe	207,915	5
Western Great Plains Shortgrass Prairie	190,939	5
Chihuahuan Loamy Plains Desert Grassland	154,355	4
Apacherian-Chihuahuan Semi-Desert Grassland and Steppe	135,445	3
Disturbed, Non-specific	105,633	3
Chihuahuan Succulent Desert Scrub	67,975	2
North American Warm Desert Pavement	27,978	1
Cultivated Cropland	20,136	< 1
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	17,327	< 1
Western Great Plains Badland	15,210	< 1
Developed, Open Space	13,346	< 1
Developed, Low Intensity	8,545	< 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 2,483 miles (3,996 km) of water courses in the Landreth-Monument Draws Watershed. The majority of these courses typically flow intermittently in summer months during periods associated with high intensity convective thunderstorms.

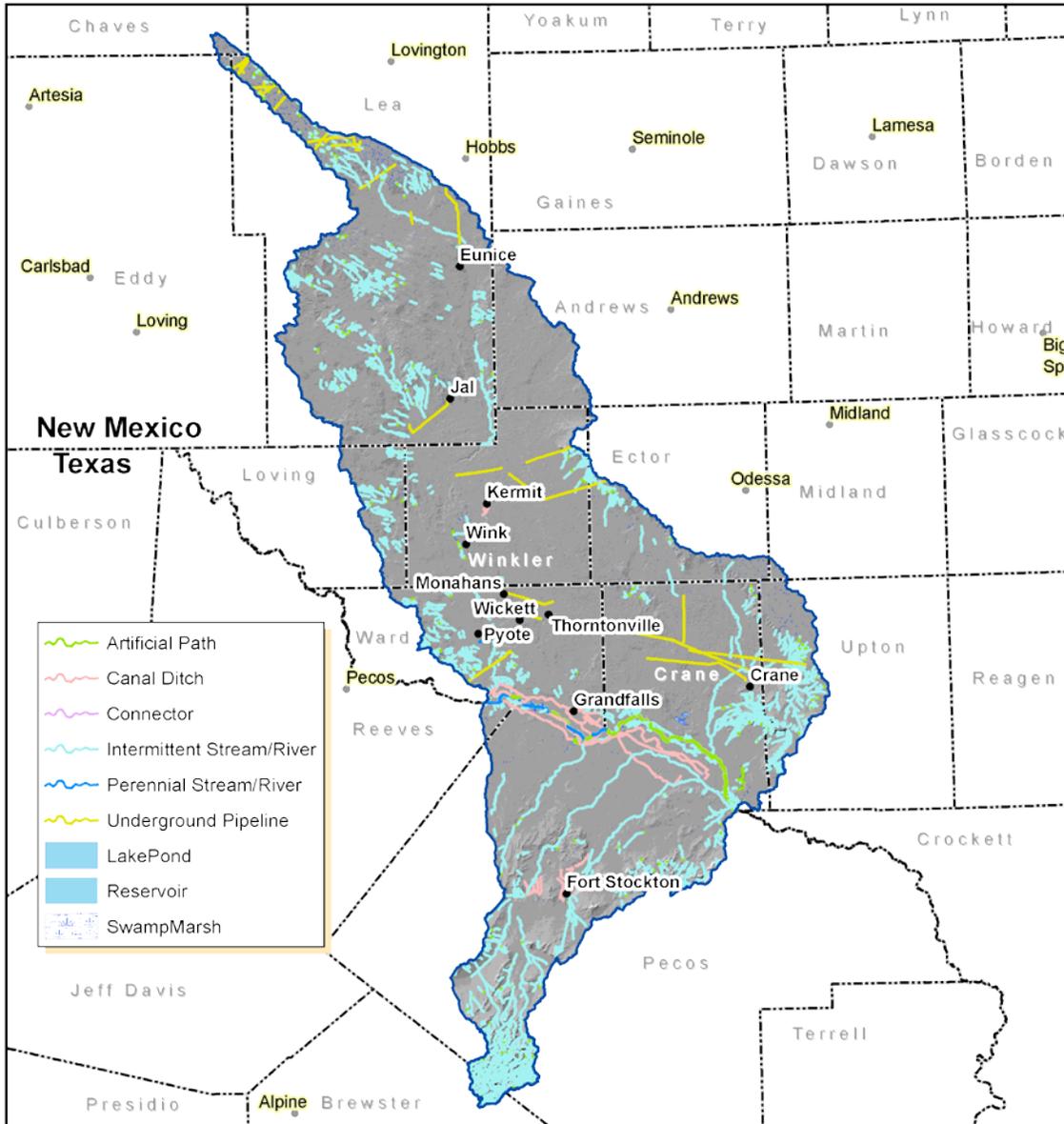


Figure 8. National Hydrologic Dataset (NHD) of the Landreth-Monument Draws Watershed.



Water Course Type	Miles
Artificial Path	103
Canal/Ditch	186
Connector	1
Intermittent Stream/River	1,946
Perennial Stream/River	29
Underground Pipeline	218
Sum (Σ)	2,483

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. The NMWQCC has defined the Landreth-Monument Draws Watershed as part of the Carlsbad River Basin.

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 designated Impaired Surface Waters in the New Mexico portion of the Landreth-Monument Draws 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. The listed here is dated as of March 19, 2008.

Category 5: The water body does not meet applicable water quality standards or is threatened for one or more designated uses by one or more pollutants.

Category 5a - A TMDL is underway, scheduled, or will be scheduled.

Category 5b - A review of the water quality standards for this water body will be conducted before a TMDL is scheduled.

Category 5c - Additional data and information will be collected before a TMDL is scheduled.

1- Upper Pecos River impaired reaches total 86 miles (138 km).

Probably Causes of Impairment	Impairment
	Upper Pecos River (1)
Depressed dissolved oxygen	5c

Table 6. TCEQ Possible causes of Impairment.



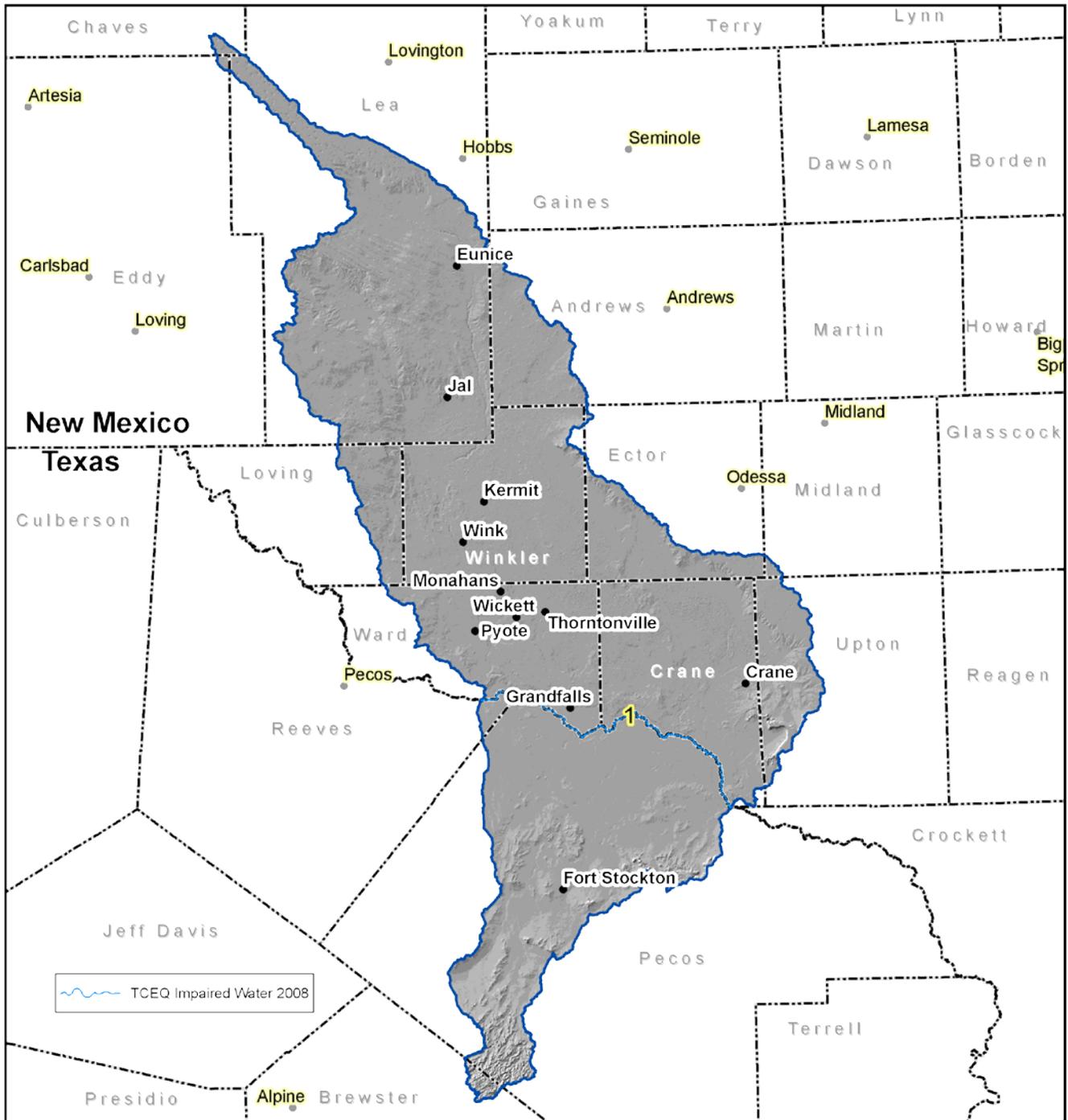


Figure 9. TCEQ Impaired Waters 2008.



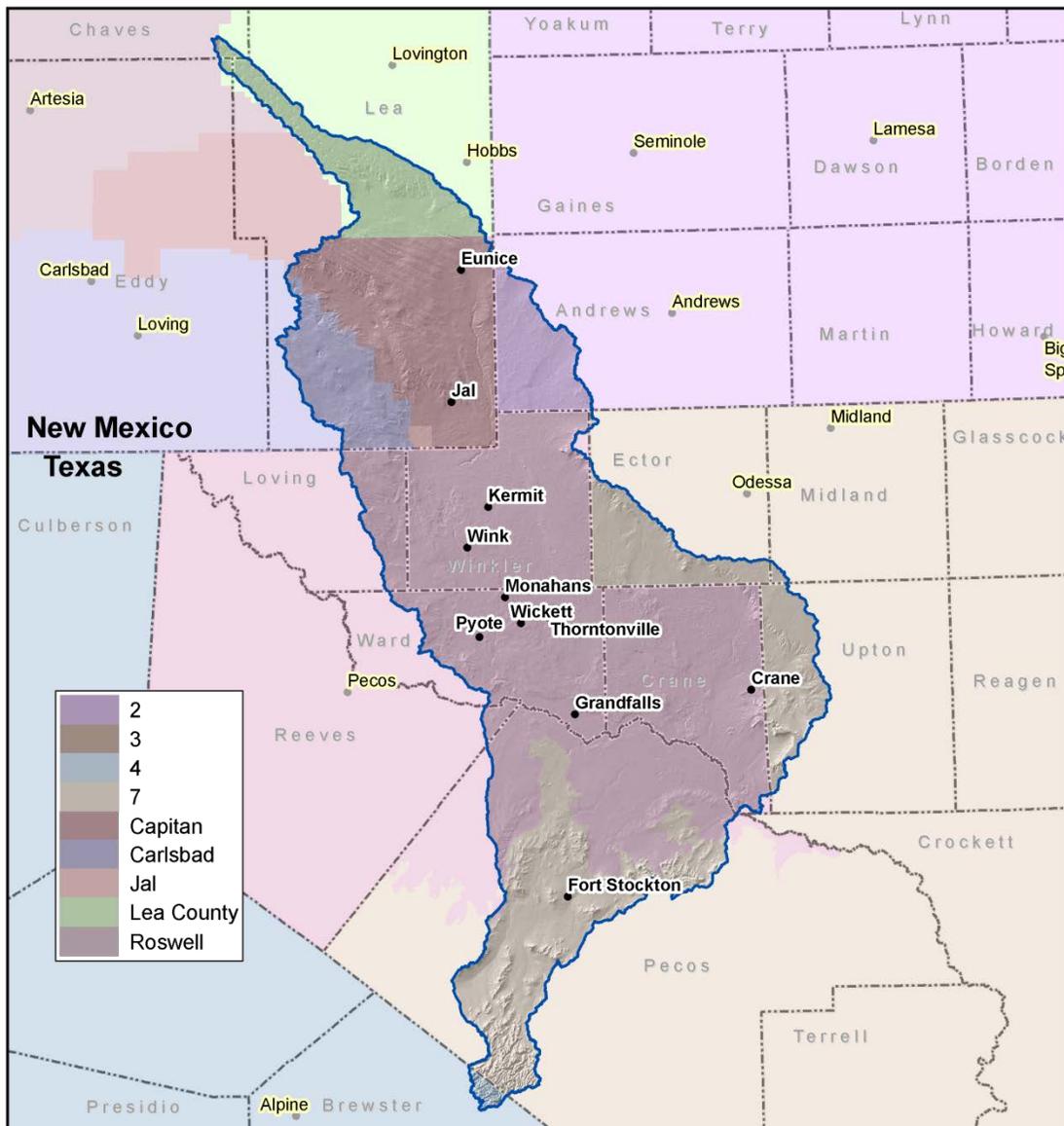


Figure 10. Declared Groundwater Basins of the Landreth-Monument Draws.

A declared groundwater basin is an area of the state proclaimed by the New Mexico 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 9 declared groundwaters in the Landreth-Monument Draws Watershed: Capitan, Carlsbad, Jal, Lea County, Roswell, GMA 2, GMA 3, GMA 4, and GMA 7.



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 (TPWD) programs track the status of threatened and endangered species which are listed on both federal and state lists. Table 7 lists those species which are currently listed and tracked in the Landreth-Monument Draws Watershed.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Federal Status</u>	<u>State Status</u>
American Peregrine Falcon	<i>Falco peregrinus anatum</i>		T
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>		
Bald Eagle	<i>Haliaeetus leucocephalus</i>		T
Big Bend gambusia	<i>Gambusia gaigei</i>	LE	E
Black bear	<i>Ursus americanus</i>		T
Black-capped Vireo	<i>Vireo atricapilla</i>	LE	E
Black-footed ferret	<i>Mustela nigripes</i>	LE	
Blue sucker	<i>Cycleptus elongatus</i>		T
Bluntnose shiner	<i>Notropis simus simus</i>		T
Bunched cory cactus	<i>Coryphantha ramillosa ssp ramillosa</i>	LT	T
Chihuahua shiner	<i>Notropis chihuahua</i>		T
Chihuahuan Desert lyre snake	<i>Trimorphodon vilkinsonii</i>		T
Chihuahuan mud turtle	<i>Kinosternon hirtipes murrayi</i>		T
Chisos Mountains hedgehog cactus	<i>Echinocereus chisoensis var chisoensis</i>	LT	T
Comanche Springs pupfish	<i>Cyprinodon elegans</i>	LE	E
Common Black-Hawk	<i>Buteogallus anthracinus</i>		T
Conchos pupfish	<i>Cyprinodon eximius</i>		T
Davis' green pitaya	<i>Echinocereus davisii</i>	LE	E
False spike mussel	<i>Quadrula mitchelli</i>		T
Gray Hawk	<i>Asturina nitida</i>		T
Gray wolf	<i>Canis lupus</i>	LE	E
Interior Least Tern	<i>Sterna antillarum athalassos</i>	LE	E
Leon Springs pupfish	<i>Cyprinodon bovinus</i>	LE	E
Lloyd's mariposa cactus	<i>Sclerocactus mariposensis</i>	LT	T
Mexican long-nosed bat	<i>Leptonycteris nivalis</i>	LE	E
Mexican stoneroller	<i>Campostoma ornatum</i>		T
Nellie cory cactus	<i>Escobaria minima</i>	LE	E
Northern Aplomado Falcon	<i>Falco femoralis septentrionalis</i>	LE	E



Ocelot	<i>Leopardus pardalis</i>	LE	E
Pecos assiminea snail	<i>Assiminea pecos</i>		E
Pecos gambusia	<i>Gambusia nobilis</i>	LE	E
Pecos pupfish	<i>Cyprinodon pecosensis</i>		T
Pecos/Puzzle sunflower	<i>Helianthus paradoxus</i>	LT	T
Peregrine Falcon	<i>Falco peregrinus</i>		T
Proserpine shiner	<i>Cyprinella proserpina</i>		T
Reddish Egret	<i>Egretta rufescens</i>		T
Reticulated gecko	<i>Coleonyx reticulatus</i>		T
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	LE	E
Salina mucket	<i>Potamilus metnecktayi</i>		T
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	LE	E
Spotted bat	<i>Euderma maculatum</i>		T
Terlingua Creek cat's-eye	<i>Cryptantha crassipes</i>	LE	E
Texas horned lizard	<i>Phrynosoma cornutum</i>		T
Texas hornshell	<i>Popenaias popeii</i>		T
Texas tortoise	<i>Gopherus berlandieri</i>		T
Trans-Pecos black-headed snake	<i>Tantilla cucullata</i>		T
White-nosed coati	<i>Nasua narica</i>		T
Whooping Crane	<i>Grus americana</i>	LE	E
Zone-tailed Hawk	<i>Buteo albonotatus</i>		T

Table 7. 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 Landreth-Monument Draws Watershed, the SWEMP and Texas Invasives.org has identified 12 species of invasive plants (Table 8). Each of these species is defined as non-native by the USDA PLANTS database.

<u>Scientific Name</u>	<u>Common Name</u>
<i>Zygophyllaceae (Caltrop Family)</i>	African Rue
<i>Scrophulariaceae (Figwort Family)</i>	Dalmatian Toadflax
<i>Asteraceae (Sunflower Family)</i>	Musk Thistle
<i>Asteraceae (Sunflower Family)</i>	Russian Knapweed
<i>Asteraceae (Sunflower Family)</i>	Yellow Starthistle
<i>Poaceae (Grass Family)</i>	Giant reed
<i>Poaceae (Grass Family)</i>	Wild Oat
<i>Chenopodiaceae (Goosefoot Family)</i>	Russian-thistle
<i>Poaceae (Grass Family)</i>	Red Brome
<i>Poaceae (Grass Family)</i>	Lehmann Lovegrass
<i>Tamaricaceae (Tamarisk Family)</i>	Salt Cedar
<i>Asteraceae (Sunflower Family)</i>	Prickly lettuce

Table 8. Invasive Species Recognized by the SWEMP and Texas Invasives.



Common Resource Areas¹⁵

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.

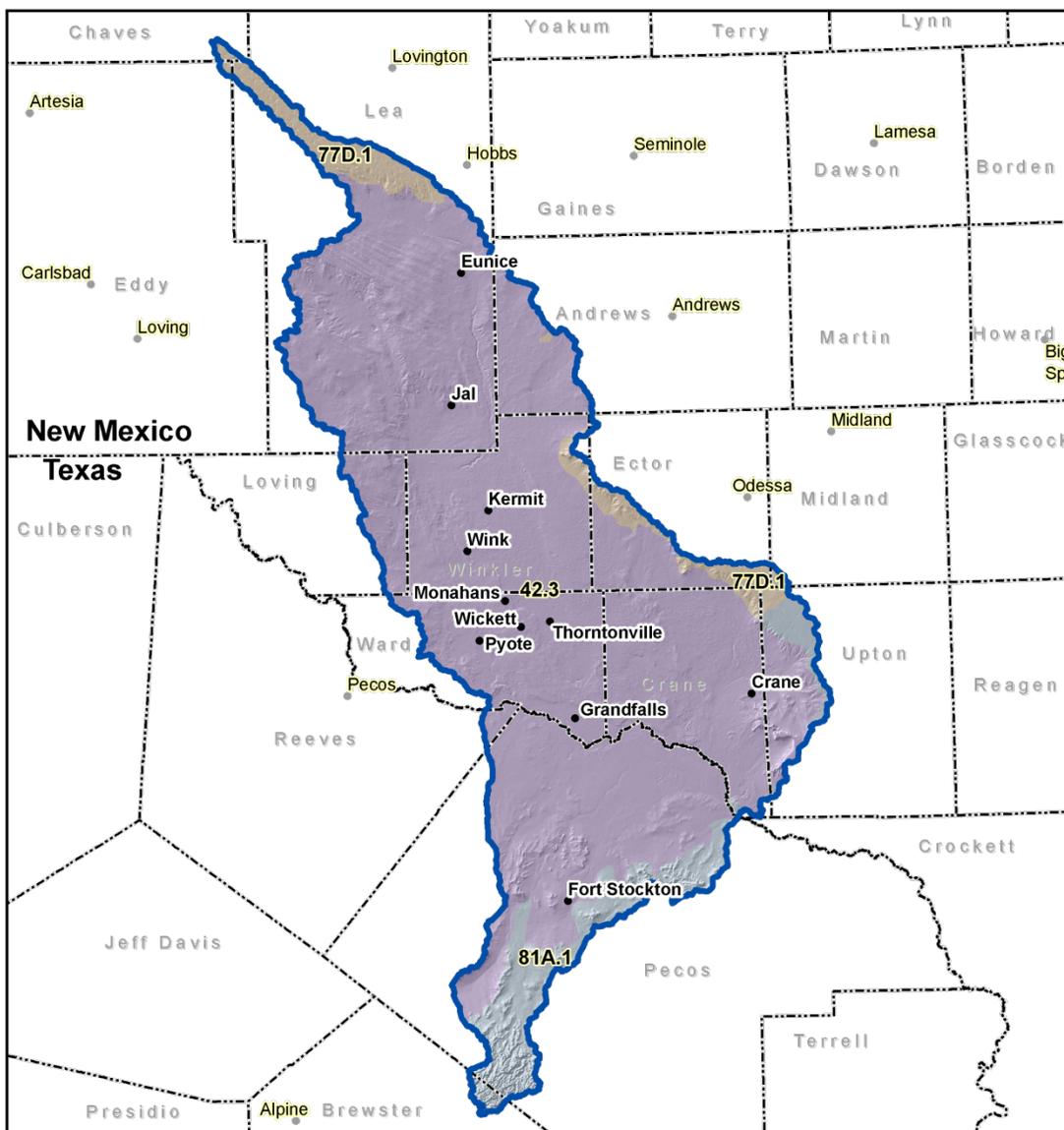
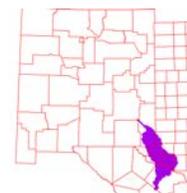


Figure 11.
Common
Resource
Areas
of the Landreth-
Monument
Draws
Watershed.



Common Resource Areas

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, soap tree yucca, catclaw, fourwing saltbush, winterfat, mesquite and desert willow.

77D.1 - High Plains, Southwestern Part

This area is characterized by nearly level to gently undulating plains with scattered playa depressions. Soil temperature regime is thermic and soil moisture regime is aridic bordering on ustic. Sandy and loamy soils are generally well drained and range from shallow to deep and medium- to coarse-textured. Native vegetation is short- to mid-grasses and sandy sites support tall-grasses with sand shin oak and mesquite. Current land use is mainly rangeland, although irrigated cropland is expanding.

81A.1 - Western Edwards Plateau

This unit consists of hills, ridges, plateaus and canyons on Cretaceous limestone and intermittent streams with gently sloping valley floors. Soil temperature regime is thermic and soil moisture regime is ustic bordering on aridic. Native vegetation is juniper shrub savannah. Soils are generally shallow and well drained. Current land uses are rangeland, wildlife habitat, and recreation. Elevation ranges from 1100 to 3600 feet and average annual precipitation is 14 to 20 inches.



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.

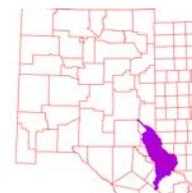


Conservation Practice	2006		2007		2008		2009		2010		TOTAL	
	#	Acres	#	Acres	#	Acres	#	Acres	#	Acres	#	Acres
Brush Management	2	26,452	5	14,278	4	20,973	4	6,228	4	40,111	19	108,042
Conservation Cover	2	3,962	1	2,874	2	391	1	2,101	2	4,753	8	14,081
Conservation Crop Rotation	3	2,933	1	83	1	550	1	1,081	1	2,416	7	5,349
Cover Crop			1	47							1	47
Critical Area Planting			1	12			1	20			2	32
Cross Wind Ridges	1	115									1	115
Forage and Biomass Planting			2	514							2	514
Forage Harvest Management	2	214									2	214
Grazing Land Mechanical Treatment			1	9	1	1,085					2	1,094
Integrated Pest Management (IPM)			1	1,437	1	486	2	585	3	4,469	7	6,977
Irrigation System, Microirrigation	2	545	1	164	2	346	2	276			7	1,330
Irrigation System, Sprinkler	1	1	1	126	1	1,282			1	390	4	1,799
Irrigation System, Surface and Subsurface	1	1	1	83	1	123	1	518			4	724
Irrigation Water Management	2	253	1	187	2	1,961	1	1,264	1	390	7	4,055
Nutrient Management			1	1,437	1	486	1	435	2	4,447	5	6,805



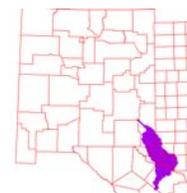
Prescribed Grazing	7	190,231	7	292,877	5	376,036	7	390,948	4	294,695	30	1,544,786
Range Planting	1	378	1	150					2	3,275	4	3,803
Residue and Tillage Management, No-Till/Strip Till/Direct Seed					1	486					1	486
Residue Management, No-Till/Strip Till	2	512	1				1	159			4	671
Residue Management, Seasonal	3	2,931	1	222	1	884	1	637	1	2,295	7	6,969
Riparian Forest Buffer					1	173					1	173
Surface Roughening									1	390	1	390
Upland Wildlife Habitat Management	5	340,838	4	279,151	6	529,091	6	333,534	5	150,420	26	1,633,033
SUM (Σ)	34	569,366	32	593,651	30	934,352	29	737,786	27	508,051	152	3,341,489

Table 9. 5 year Trends in Applied Conservation Practices. Reported in Acres.



Conservation Practice	2006		2007		2008		2009		2010		TOTAL	
	#	Feet	#	Feet	#	Feet	#	Feet	#	Feet	#	Feet
Conservation Completion Incentive			1								1	
Fence	2	44,576	3	20,030	3	45,584	2	15,228	3	55,910	13	181,327
Firebreak									1	1,379	1	1,379
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground,	1	78									1	78
Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic	1	78			1	121	1	153	1	143	4	496
Pipeline	3	22,471	1	8,527	2	20,908	2	6,457	3	51,674	11	110,037
Pumping Plant	2		2		2		1		3		10	
Water Well	2		2		2		1		2		9	
Watering Facility	3		3		2		2		4		14	
SUM (Σ)	14	67,203	12	28,557	12	66,613	9	21,838	17	109,106	64	293,317

Table 10. 5 Year Trends in Location Specific Applied Conservation Practices. Reported in Feet if Linear (i.e. Fence)



Soil Resource Inventory¹⁷

The Landreth-Monument Draws 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:

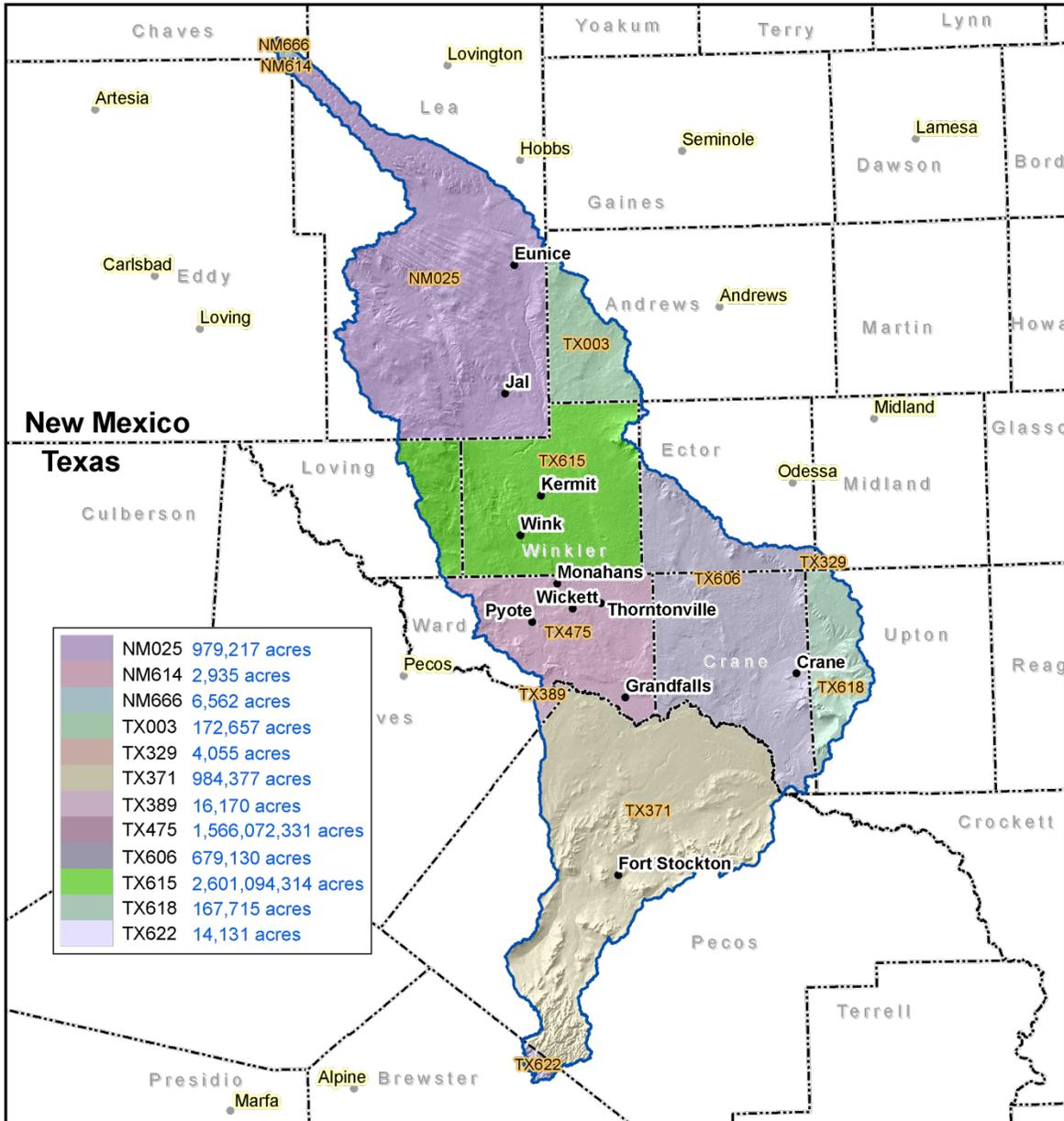


Figure 12. National Cooperative Soil Survey coverage of the Landreth-Monument Draws Watershed.



Soil Resource Inventory

In order to evaluate the susceptibility of erosion within the Landreth-Monument Draws 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 -

<u>SSURGO Value</u>	<u>Nominal Description</u>	<u>Model Rank</u>
Saturated Hydraulic Conductivity		
$\mu\text{m} / \text{s}$		
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 11. 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.

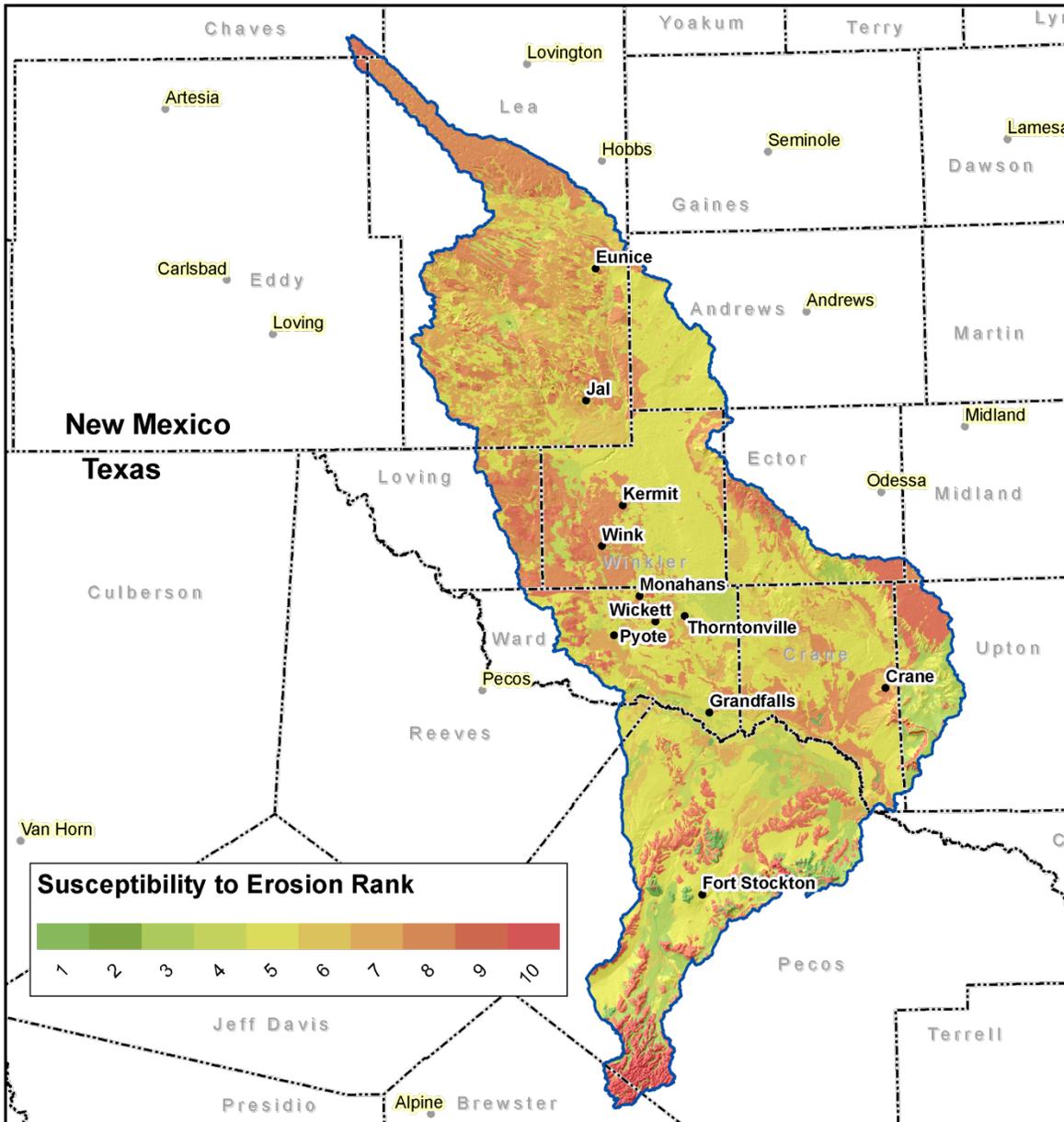


Figure 13. Landreth-Monument Draws Watershed Erosion Potential.



Soil Resource Inventory

<u>Rank</u>	<u>Acres</u>
1	4,361
2	28,331
3	200,919
4	256,524
5	1,660,605
6	333,215
7	391,788
8	702,779
9	366,090
10	75,074
Sum(Σ)	4,019,686

Table 12. 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
Lea, NM	55,511	43,665	11,846	377	11,469	22,010	37,263	2,426	551	216	24	13,217	1,814	46,236
Andrews, TX	13,004	10,569	2,435	75	2,360	5,202	10,024	214	115	92	3	2,183	373	53,405
Brewster, TX	8,866	5,906	2,960	37	2,923	3,867	7,189	108	75	33	5	1,192	264	50,975
Crane, TX	3,996	3,567	429	0	429	1,753	2,945	116	39	14	0	779	103	49,432
Ector, TX	121,123	109,859	4,264	550	3,714	51,306	89,257	5,583	1,002	775	49	21,051	3,406	53,034
Loving, TX	67	0	67	7	60	7	60	0	0	0	0	6	1	81,641
Midland, TX	116,009	100,757	15,252	226	15,026	33,676	89,702	8,101	741	1,074	36	14,124	2,231	62,792
Pecos, TX	16,809	9,908	6,901	217	6,684	10,262	12,349	738	71	86	1	2,711	453	42,649
Reeves, TX	13,137	10,838	2,304	38	2,266	9,640	10,421	276	67	46	1	1,974	352	41,099
Upton, TX	3,404	0	3,404	131	3,273	1,449	2,648	55	41	1	2	611	46	48,816
Ward, TX	10,909	7,351	3,558	154	3,404	4,580	8,704	503	72	31	3	1,366	230	46,844
Winkler, TX	7,173	5,821	1,352	30	1,322	3,156	5,366	133	32	14	0	1,460	168	45,082

Table 13. Socioeconomic Data of the Counties in the Landreth-Monument Draws Watershed (2000).



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



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