

Ecological site R042AD001NM

Loamy, Dry Mixed Prairie

Accessed: 09/24/2026

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site consists of very deep, soils that formed in calcareous alluvium derived from sedimentary material. The sites are on alluvial bottoms, fan aprons and, inset fans, fan piedmonts, terraces and have slopes of 0 to 5 percent. The mean annual precipitation is about 12 inches and the mean annual air temperature is about 61 degrees F. Elevations range from 4700 to 6000 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Fan apron (2) Inset fan (3) Fan piedmont
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Ponding frequency	None
Elevation	1,430 – 1,830 m
Slope	0 – 10 %
Water table depth	150 cm

Aspect	Aspect is not a significant factor
--------	------------------------------------

Climatic features

Average precipitation for this site is approximately 12 to 14 inches. Variations of 5 inches are not uncommon. Approximately 75 percent occurs from May through October with most of the rainfall occurring from July to September. Most of the summer precipitation comes in the form of high intensity, short duration thunderstorms. Rain and snow of low intensity characterize the limited winter precipitation.

Temperatures are mild. Freezing temperatures are common at night from December through April, however, temperatures during the day are frequently above 50 degrees F. Occasionally in December to February brief periods of 0 degrees F. temperatures may be expected. During June to August some days may exceed 100 degrees F.

The mean annual precipitation figures are derived from rain gauge data collected by the BLM (1971 to 1990), and NOAA weather maps utilizing prism model estimation techniques. There are no permanent weather stations within the boundaries of the Land Resource Unit.

Table 3 Representative climatic features

Frost-free period (average)	180 days
Freeze-free period (average)	190 days
Precipitation total (average)	360 mm

Influencing water features

This site is not influenced by water from wetland or stream.

Soil features

Soils are deep to very deep. Surface layers are loam, and silt loam. Substratum textures are loam, silt loam, clay loam and silty clay loam. Subsoil textures are loam, silt loam and silty clay loam. Some subsoils may have more than 15 percent calcium carbonate. The soils are well drained and have a moderately slow permeability. Available water capacity is very high. This site usually receives some extra water from higher surrounding terrain. If unprotected by vegetative cover the soils become susceptible to water erosion.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic soils:

Reyab
Salado

Table 4. Representative soil features

Parent material	(1) Alluvium – limestone
Surface texture	(1) Loam (2) Silt loam (3) Silty clay loam
Family particle size	(1) Loamy

Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to moderate
Soil depth	150 – 200 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	14.73 – 17.27 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 20 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The aspect of this site's historic plant community is open prairie grassland. This site is positioned in a topographic setting to receive run-on water from adjacent gravelly and shallow sandy sites. Short grasses dominate with varying amounts of mid to tall grasses occupying the moister microclimates within the site. Blue grama and tobosa are the dominant grass species. Occasional forbs and woody shrubs occur in association with the grasses. Broad collections of soil series are often grouped into the loamy site and the differences in these series can often account for variations in the plant communities. Grass species dominance fluctuates between blue grama and tobosa, and can be affected by soil texture, landscape position, and disturbance. Retrogression within the grassland state is characterized by a decrease of blue grama, and an increase in tobosa, burrograss and tarbush.

Transition to a shrub-invaded state is facilitated by loss of grass cover due to drought or overgrazing. Fire suppression and increased winter precipitation may also be important components favoring shrub seedling establishment. Continued reduction in grass cover and increased erosion may eventually lead to a shrub-dominated state. Once erosion has removed soil surface horizons, shrub removal will not result in grass recovery. Few systematic studies of vegetation dynamics have been preformed within the SD-4 Loamy ecological site. Generally this site is less susceptible to shrub encroachment than those sites receiving less run-on water.

State and transition model

Figure 3. Loamy S&T Diagram

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1				336-404	
	tobosagrass	PLMU3	<i>Pleuraphis mutica</i>	336-404	–
2				336-404	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	336-404	–
3				135-161	
	vine mesquite	PAOB	<i>Panicum obtusum</i>	84-112	–
	cane bluestem	BOBA3	<i>Bothriochloa barbinodis</i>	56-84	–
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	56-84	–
	Hall's panicgrass	PAHA	<i>Panicum hallii</i>	28-56	–
4				108-135	
	sand muhly	MUAR2	<i>Muhlenbergia arenicola</i>	84-112	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	84-112	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	28-56	–
5				67-108	
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	34-50	–
	plains lovegrass	ERIN	<i>Eragrostis intermedia</i>	34-50	–
	green sprangletop	LEDU	<i>Leptochloa dubia</i>	34-50	–
6				40-67	
	threeawn	ARIST	<i>Aristida</i>	40-67	–
	ear muhly	MUAR	<i>Muhlenbergia arenacea</i>	40-67	–
	burrograss	SCBR2	<i>Scleropogon brevifolius</i>	40-67	–
Forb					
7				13-27	
	croton	CROTO	<i>Croton</i>	13-27	–
	bladderpod	LESQU	<i>Lesquerella</i>	13-27	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	13-27	–
8				7-13	
	Forb, perennial	2FP	<i>Forb, perennial</i>	7-13	–
9				7-13	
	Forb, annual	2FA	<i>Forb, annual</i>	7-13	–
Shrub/Vine					
10				3-7	
	jointfir	EPHED	<i>Ephedra</i>	3-7	–
	American tarwort	FLCE	<i>Flourensia cernua</i>	3-7	–

	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	3-7	–
11				3-7	
	pricklypear	OPUNT	<i>Opuntia</i>	3-7	–
	soaptree yucca	YUEL	<i>Yucca elata</i>	3-7	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Animal community

Wildlife: This site provides habitat which supports a resident wildlife community characterized by pronghorn antelope, coyote, badger, black-tailed prairie dog, red-tailed hawk, meadow lark, horned lark and prairie rattlesnake.

Hydrological functions

This site normally receives approximately 12-14 inches annual precipitation. Most summer rainfall occurs as brief sometimes-heavy thunderstorms. Soils are deep to very deep and rated as being in hydrologic group B. Slopes range from 0 - 5 percent. Permeability is moderately slow. Runoff is low to medium, and the hazard of water erosion is slight to moderate. Available water capacity to a depth of 40 inches is moderate. As basal cover and litter are reduced and the size of gaps between vegetation increases, the surface soils become exposed to accelerated erosion. Soil Hydrologic Unit Reyab -----B Saldado -----B

Recreational uses

This site offers good potential for antelope and predator hunting, wildlife observation and photography. Scenic beauty of this site will especially appeal to those who value wide open prairie grasslands.

Wood products

This site has no significant value for wood products.

Other products

Grazing: Currently the majority of the livestock use on this site is with mother cows in cow-calf operations. Historic use has been sheep and cattle. The plant community on this site is well suited to grazing by both domestic livestock of all kinds and by wildlife at all seasons of the year. This site responds best to a system of management that rotates the season of use. Initial starting stocking rates will be determined with the landowner or decision-maker. They will be based on past use histories and type and condition of the vegetation. Calculations used to determine an initial starting stocking rate will also be based on forage preference ratings.

Inventory data references

Supporting information includes limited clipping data, soil survey investigations, aerial photographs, and personal observations.

Type locality

Location 1: Otero County, NM	
Township/Range/Section	T24S R13E S15

General legal description	Otero County, New Mexico; on Otero Mesa about 1.8 miles south on County Road 506 from the guard station on the east gate of the McGregor Missile Range and 250 feet west of the road; NW1/4, NW1/4 section 15, T.24S., R.13E.
---------------------------	---

Other references

1. Moir, W. H., and J. A. Ludwig. 1991. Plant succession and changing land features in desert grasslands. P. 15-18. In P.F. Ffolliott and W.T. Swank (eds.) People and the temperate region: a summary of research from the United States Man and the Biosphere Program 1991. U.S. Dept. State, Publ No. 9839, Nat. Tech. Info. Serv., U.S. Dept. Commerce, Springfield, Illinois. 63 p.
2. Holechek, J.L., R.D. Pieper, and C.H. Herbel. 1989. Range Management Principles and Practices. Prentice-Hall, Inc. Englewood Cliffs, New Jersey.
3. Brooks, M.L., and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress on Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11, Tall Timbers Research Station, Tallahassee, FL.
4. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheets. Rangeland Soil Quality—Organic matter, infiltration, soil aggregate stability. Rangeland Sheets 6,5,3, [ONLINE] Available: <http://www.statlab.iastate.edu/survey/SQL/range.html>

Contributors

David Trujillo
Jason S. Martin

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

7. Amount of litter movement (describe size and distance expected to travel):

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):

12. Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):

Dominant:

Sub-dominant:

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

14. Average percent litter cover (%) and depth (in):

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):

16. Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:

17. Perennial plant reproductive capability:
