

Ecological site R077BY033NM

Loamy

Accessed: 05/19/2024

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.

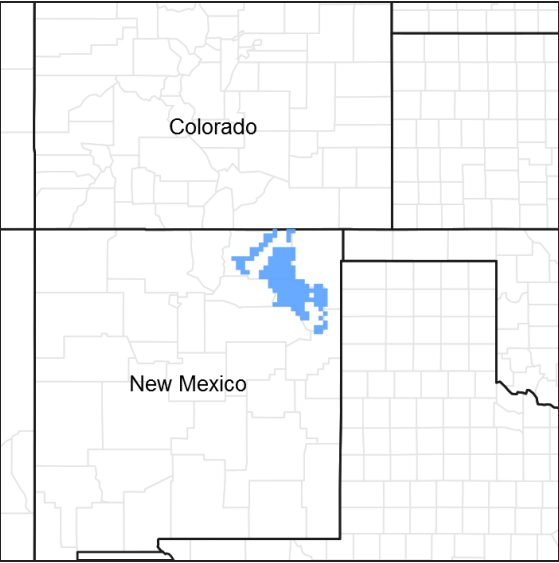


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Classification relationships

Characteristic Soils Are:
Berthoud Carnero
Texline
Other Soils included are:
Campus, Dean, Dioxice, Dumas, Gruver Kim, Tapia

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on level to gently undulating plains of the High Plains. Elevations range from 4,300 to 5,100 feet above sea level. Slopes range from 0 to 9 percent.

Table 2. Representative physiographic features

Landforms	(1) Plain
Elevation	1,311–1,554 m
Slope	0–9%
Aspect	Aspect is not a significant factor

Climatic features

The climate of this area can be classified as “semi-arid continental”.

Precipitation averages from about 15 to 16 inches annually with approximately 75 percent of this yearly moisture falling during the period of May through October. Most summer rainfall is associated with usually brief afternoon and evening thundershowers, which occasionally produce heavy rain over a small area, and sometimes bring a little hail. Winters are generally dry, with only one or two days a month when as much as one-tenth inch of moisture falls. However, winter average 20 inches of snow, although most snowfalls are light with an occasional storm producing up to six inches. Following these storms, snow may lie on the ground for several days and occasionally moderate to strong winds accompanying these storms result in blizzard conditions and heavy drifting. Although the precipitation patterns favor the production of warm-season plants, sufficient moisture is received in the late winter and the spring to support cool-season plants. Approximately 25 percent of the annual precipitation is received during April and May. May is generally the wettest month followed by July and then August.

Temperatures show the seasonal changes and large annual and diurnal ranges characteristic of such a climate. Summers are generally mild. The high daily temperature reading exceed 90 degrees F about one-third of the time, and readings of 100 degrees F occur about once a year. Rapid cooling after sundown results in minimum temperatures below 60 degrees F on most nights, even in midsummer. Winter shade temperatures usually rise to the mid-40's and an average of only 15 days fail to see temperatures rise above the freezing mark most of the time from early November through March; below zero readings occur on an average of only three times a year.

The freeze-free season ranges from 168 days to 171 days between April 28th to October 16th. Both temperatures and annual precipitation favor warm-season plants. About 40 percent of the annual precipitation is received during the season where temperatures will benefit cool-season plants and only 10 percent falls during the dormant season.

While open to winter invasions of arctic air over the Great Plains, this area is far enough south and west to miss many of these outbreaks. Mountains to the north and west intercept much of the precipitation from the Pacific northwest storms coming through this area during the winter. An average hourly wind velocity for the year is 15 miles per hour. Somewhat higher winds prevail during the spring months, but velocities exceeding 24 mile per hour are experienced only 10 percent of the usual year. Stronger winds blow chiefly from a westerly or southwesterly direction during the spring. Relative humidity is moderately low.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3. Representative climatic features

Frost-free period (average)	191 days
Freeze-free period (average)	220 days
Precipitation total (average)	406 mm

Influencing water features

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

Soil features

These soils are moderately deep to deep, well-drained soils. The surface layers are loams 8 to 12 inches over a

loam or clay loam subsurface. These soils have moderate to moderately slow permeability. Runoff is medium. Available water-holding capacity is high. Effective rooting depth is 20 to more than 60 inches.

Table 4. Representative soil features

Surface texture	(1) Loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow to moderately slow
Soil depth	152–183 cm
Available water capacity (0-101.6cm)	22.86–30.48 cm
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Soil reaction (1:1 water) (0-101.6cm)	6.6–9
Subsurface fragment volume <=3" (Depth not specified)	5–32%
Subsurface fragment volume >3" (Depth not specified)	0–12%

Ecological dynamics

State and transition model

Ecosystem states

1. Historic Climax Plant Community

State 1 submodel, plant communities

1.1. Historic Climax Plant Community

State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community

This site is a grassland dominated by warm-season short and mid-grasses with only an occasional shrub or half-shrub. Cool-season forbs and grasses make up an important minor component.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	356	653	950
Forb	54	99	143
Shrub/Vine	27	49	72
Total	437	801	1165

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	3-5%
Grass/grasslike foliar cover	30-35%
Forb foliar cover	2-5%
Non-vascular plants	0%
Biological crusts	0%
Litter	25-30%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Figure 5. Plant community growth curve (percent production by month). NM4733, R077BY033NM Loamy Reference State. R077BY033NM Loamy Reference State.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	3	3	5	5	25	30	15	8	4	0

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Blue grama			432–493	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	432–493	–
2	Buffalograss			62–123	
3	Sideoats Grama			62–123	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	62–123	–
4	Vine-mesquite			37–62	
	vine mesquite	PAOB	<i>Panicum obtusum</i>	37–62	–
5	Western wheatgrass			62–123	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	62–123	–
6	Galleta			37–62	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	37–62	–
7	Silver Bluestem			37–62	
	silver bluestem	BOSA	<i>Bothriochloa saccharoides</i>	37–62	–
8	Sand Dropseed			37–62	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	37–62	–
9	Bottlebrush squirreltail			25–49	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	25–49	–
10	Threeawn spp.			25–49	
	threeawn	ARIST	<i>Aristida</i>	25–49	–
11	Sand Muhly			0–25	
	sand muhly	MUAR2	<i>Muhlenbergia arenicola</i>	0–25	–
12	Ring Muhly			0–25	
	ring muhly	MUTO2	<i>Muhlenbergia torreyi</i>	0–25	–
13	Switchgrass			0–37	
	switchgrass	PAVI2	<i>Panicum virgatum</i>	0–37	–
14	Other grasses			62–123	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	62–123	–
Forb					
15	Sunflower scurfpea zinnia			37–62	
	sunflower	HELIA3	<i>Helianthus</i>	37–62	–
	lemon scurfpea	PSLA3	<i>Psoraleidium lanceolatum</i>	37–62	–
	desert zinnia	ZIAC	<i>Zinnia acerosa</i>	37–62	–
16	Perennial and annual forbs			37–62	
	Forb, annual	2FA	<i>Forb, annual</i>	37–62	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	37–62	–
Shrub/Vine					
17	fringed sarewort groundsel other shrubs			37–62	
	Shrub, deciduous	2SD	<i>Shrub, deciduous</i>	37–62	–
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	37–62	–
	ragwort	SENEC	<i>Senecio</i>	37–62	–

Animal community

No Data

Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Soil Series---- Hydrologic Group

Berthoud----- B

Carnero----- C

Campus----- B

Dean----- B

Dioxice----- B

Duma----- B

Gruver----- C

Tapia----- B

Texline----- B

Recreational uses

This site has limited recreation potential; limited mainly by lack of live water and shade. Hiking, camping and picnicking are poor to fair. Photography of wild flowers and wildlife is fair.

Hunting for antelope is fair to good. The natural beauty is enhanced by the "wide open spaces" typical of the area.

Wood products

This site produces no commercial wood products.

Other products

Grazing:

This site can be used by all classes of livestock during any season of the year. Due to the occasional severe winter storms, emergency feed may be necessary. Yearling calves grazing from April to October may be favored because of these winter storms. Supplemental protein is needed if site is grazed during the winter. Continuous yearlong grazing or grazing continually during the period from April through October will result in a plant community dominated by blue grama and buffalograss. Continuous heavy grazing will cause blue grama to form low dense turf. Forage production is greatly reduced under these conditions. A system of deferred grazing, which varies the season of grazing and rest in a pasture during successive years, is needed to improve or maintain a healthy well-balanced plant community. Different seasons of rest will benefit different plants. Winter rest will benefit winterfat and fringed sagewort. Spring rest (April – June) will allow western wheatgrass to grow and reproduce. Summer rest will benefit warm-season species such as blue grama, sideoats grama, and vine-mesquite. Approximately 90 percent of the total yield is from species that furnish forage for grazing animals.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index ---Ac/AUM

100 - 76----- 2.2 – 2.7

75 – 51----- 2.8 – 5.1

50 – 26----- 5.1 – 8.8

25 – 0----- 8.8+

Type locality

Location 1: Colfax County, NM

Location 2: Harding County, NM
Location 3: Union County, NM

Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern High Plains 77 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys Union, Harding Colfax.

Contributors

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 Elizabeth Wright
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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:**
