Ecological site R070BY074NM
Sandy Plains (Cool)

Last updated: 9/12/2023
Accessed: 09/14/2026

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.

Ecological site concept

This site occurs on deep or very deep soils with coarse surface textures and a significant clay increase with depth. Slopes range from 0 to 15 percent. While climatic criteria have not been specified, this site occupies cooler areas than R070BY055NM.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Ephedra* (2) *Krascheninnikovia lanata*
Herbaceous	(1) *Andropogon gerardii* (2) *Andropogon hallii*

Physiographic features

This site occurs on level to gently sloping or undulating piedmont slopes or plains. Slopes average less than 10 percent, but range as high as 15 percent. Aspect varies but is not ecologically significant. Elevation ranges from 5,000 to 7,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Sand sheet
Flooding frequency	None
Ponding frequency	None
Elevation	1,520 − 2,130 m
Slope	10 − 20 %

Water table depth	180 cm
Aspect	Aspect is not a significant factor

Climatic features

The narrative below applies to MLRA 70B in general. However, this site is distinguished as being “cool.” Thus, it can be expected to either occur at the cooler end of this climatic spectrum and, perhaps, extend beyond it.

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

Annual average precipitation ranges from 11 to 16 inches. Roughly 78 percent of the moisture falls during the 6-month period of May through October. Most of this summer precipitation falls in the form of brief and heavy afternoon and evening thunderstorms. Hail may accompany the more severe summer storms. In the winter, there is normally only one day a month when as much as one-tenth inch of moisture falls, usually in the form of snow. Snow seldom lies on the ground for more than a few days.

Temperatures are characterized by a distinct seasonal change and large annual and diurnal temperature ranges. Summers are moderately warm. Maximum temperature average above 90 degrees F from July to August, and an average summer includes about 80 days with high readings exceeding 90 degrees F and 10 days with readings above 100 degrees F. Temperatures usually fall rapidly after sundown and lows average 60 degrees F on most summer nights. Winters are mild, sunny, and dry. Daytime shade temperatures in midwinter usually rise to the 50’s. However, freezing temperatures normally occur at night from mid-November to mid-March.

The freeze-free season ranges from 196 to 218 days. Dates of the last freeze range from April 11th to April 17th and the first freeze ranges from October 20th to October 25th.

Both temperature and rainfall distribution favor warm-season, perennial plant communities in the area. However, sufficient late winter and early spring moisture allows cool-season species to occupy a minor component within the plant community.

Climate data was obtained from http://www.wrcc.dri.edu/summary/climsmnm.html web site. Data were interpreted utilizing NM Climate Summarizer spreadsheet.

Table 3 Representative climatic features

Frost-free period (average)	200 days
Freeze-free period (average)	220 days
Precipitation total (average)	410 mm

Influencing water features

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

Soil features

The soils of this site are well-drained, and range from moderately deep to very deep. Typically, the surface horizon is 5 to 8 inches thich with a texture of loamy fine sand. Subsoil has a texture of sandy clay loam, clay loam, or very fine sandy loam. Permeability is moderately rapid to rapid with moderate to high water-holding capacity. Due to the coarse-textured surfaces, these soils are subject to blowing when plant cover does not protect the surface.

Table 4. Representative soil features

Surface texture	(1) Loamy fine sand

Family particle size	(1) Sandy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately rapid to rapid
Soil depth	Not specified
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	15.24 – 30.48 cm
Electrical conductivity (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

This site occurs on piedmont slopes or plains at elevations of 5,000 to 7,000 feet. Perennial grasses dominate the historic plant community in association with scattered shrubs and trees. Sand bluestem and big bluestem are the dominant grasses of the reference community. Continuous grazing pressure can result in a decrease in these and other palatable grasses and can eventually result in a less productive, sod-bound blue grama state. Pinyon/juniper may encroach due to seed dispersal, lack of fire, and decreased competition resulting from loss of grass cover. Periods of mild, wet winters may also favor pinyon/juniper encroachment.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1				280-381	
	big bluestem	ANGE	*Andropogon gerardii*	286-381	–
	sand bluestem	ANHA	*Andropogon hallii*	286-381	–
2				191-280	
	sideoats grama	BOCU	*Bouteloua curtipendula*	191-286	–
	little bluestem	SCSC	*Schizachyrium scoparium*	191-286	–
3				90-191	
	black grama	BOER4	*Bouteloua eriopoda*	95-191	–
4				191-280	
	blue grama	BOGR2	*Bouteloua gracilis*	191-286	–
	hairy grama	BOHI2	*Bouteloua hirsuta*	191-286	–
5				191-247	
	spike dropseed	SPCO4	*Sporobolus contractus*	191-252	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	191-252	–
6				90-191	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	95-191	–
7				56-90	
	common wolfstail	LYPH	*Lycurus phleoides*	57-95	–
8				56-90	
	Indiangrass	SONU2	*Sorghastrum nutans*	57-95	–
9				34-56	
	sedge	CAREX	*Carex*	38-57	–
10				56-90	
	Graminoid (grass or grass-like)	2GRAM	*Graminoid (grass or grass-like)*	57-95	–
Forb					
11				34-56	
	buckwheat	ERIOG	*Eriogonum*	38-57	–
12				34-56	
	leatherweed	CRPOP	*Croton pottsii var. pottsii*	38-57	–
13				34-56	
	locoweed	OXYTR	*Oxytropis*	38-57	–
14				34-56	
	purple sand verbena	ABAN	*Abronia angustifolia*	38-57	–
15				34-56	
	Forb, perennial	2FP	*Forb, perennial*	38-57	–
Shrub/Vine					
16				34-90	
	fourwing saltbush	ATCA2	*Atriplex canescens*	38-95	–
	jointfir	EPHED	*Ephedra*	38-95	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	38-95	–
	yucca	YUCCA	*Yucca*	38-95	–
17				90-191	
	sand sagebrush	ARFI2	*Artemisia filifolia*	95-191	–
	juniper	JUNIP	*Juniperus*	95-191	–

	skunkbush sumac	RHTR	*Rhus trilobata*	95-191	–
18				34-90	
	Shrub, deciduous	2SD	*Shrub, deciduous*	38-95	–
	sacahuista	NOMI	*Nolina microcarpa*	38-95	–

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 (%)

Animal community

Habitat for Wildlife: This site provides habitat for a resident animal community characterized by pronghorn antelope, kit fox, badger, coyote, bobcat, desert cottontail, Ord's kangaroo rat, white-throated woodrat, Botta's pocket gopher, plains pocket mouse, northern grasshopper mouse, sparrow hawk, mourning dove, meadowlark, plains spadefoot toad, eastern fence lizard, plateau whiptail, shorthorned lizard, and prairie rattlesnake. Where dense stands of pinyon and/or juniper occur, woodland wildlife species such as mule deer, gray fox, rock squirrel, pinyon jay, scrubjay, and Cassin's kingbird are characteristic. Common raven and prairie falcon hunt over this site.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups. Hydrologic Interpretations Soil Series Hydrologic Group Berwolf ----------B Pojo ----------C

Recreational uses

This site offers fair potential for hiking, backpacking, camping, and picnicking, each limited by the lack of surface water and shade. Hunting for antelope, small game, and birds is good. Trapping of fur-bearing animals is also good. The natural beauty of the area is enhanced during years of abundant rainfall by a large variety of wildflowers.

Wood products

This site has no significant potential for wood products. Where stands of pinyon or juniper occur, care must be taken when harvesting fence material or fuelwood due to the soils' susceptibility to erosion.

Other products

Grazing: This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. However, it is not suited to continuous yearlong grazing or continuous grazing during the growing season. This site responds rapidly to any rainfall it might receive. It also responds well to a system of grazing which rotates the season of use. As this site deteriorates, palatable cool- and warm-season grasses disappear and are replaced by low-vigor sod-like blue grama. As deterioration continues, this sod-like blue grama will decrease and an increase of bare ground and woody vegetation will occur. If this happens, the site may support a good even-aged stand of pinyon and/or juniper. This site is extremely erosive when in a deteriorated state.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month Similarity Index Ac/AUM 100 - 76 2.1 – 2.9 75 – 51 2.8 – 4.3 50 – 26 4.2 – 6.8 25 – 0 6.8+

Type locality

Location 1: De Baca County, NM

Other references

Data collection for this site was performed in conjunction with the progressive soil surveys within the Pecos-Canadian Plains and Valleys 70 Major Land Resource Area of New Mexico. This site has been mapped and correlated to soils in the following counties: San Miguel,

Quay, Guadalupe, De Baca and Chaves.

Contributors

Don Sylvester
Elizabeth Wright
John Tunberg

Approval

Kendra Moseley, 9/12/2023

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	09/14/2026
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:**
