

Ecological site R039XB052NM

Mountain Valley

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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs as broad drainageways, narrower valleys, and mesa tops and parks that occur in a swale-type position. This site receives extra water from stream overflow or runoff from adjacent sites. Aspect varies but is not significant. Slopes vary from flat to gently sloping, rarely exceeding 5 percent. Elevation ranges from 6,500 to 12,000 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Mountain valley
Elevation	1,981–3,658 m
Slope	0–5%
Aspect	Aspect is not a significant factor

## Climatic features

The average annual precipitation ranges from 16 to 30 inches. Precipitation increases with elevation. Variations of 5 inches, more or less, are common. Nearly two-thirds of the precipitation falls in the form of high intensity, short-duration thunderstorms from March to October. Winter precipitation is mainly in the form of snowfalls of 6 to 10 inches.

Mild summers and moderately cold winters characterize the temperature regime. Large seasonal and diurnal temperature changes occur. The average annual temperature is about 45 degrees F with extremes of -26 degrees F in winter to 100 degrees F in summer.

The average frost-free season is 80 to 145 days. The last killing frost is in early May to early June and the first killing frost is in early September to early October.

Temperature and precipitation favor cool-season, perennial plant growth. However, the temperatures are warm enough at the lower elevations to allow warm-season species to occupy an important part of this plant community. Due to the swale or bottomland position of this site and the overflow it receives, this site has a higher plant density and production than adjoining sites.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> 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)	147 days
Freeze-free period (average)	175 days
Precipitation total (average)	762 mm

## Influencing water features

This site may be influenced by water from a wetland or stream.

## Soil features

The soils of this site are deep and well drained. Surface textures are loam to clay loam. The textures of the underlying layers are clay loam at about 3 to 6 inches. Permeability is slow, and available water-holding capacity is high.

**Table 4. Representative soil features**

Surface texture	(1) Cobbly loam (2) Stony clay loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow
Soil depth	152–183 cm
Surface fragment cover >3"	15–35%
Available water capacity (0-101.6cm)	22.86–30.48 cm
Subsurface fragment volume >3" (Depth not specified)	15–35%

Ecological dynamics

To be developed.

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

The aspect of this site is that of an open stand of cool-season, perennial mid-grasses with scattered shrubs and trees. Forbs are varied and make up a minor but important component of this site. Other grasses that could appear on this site include: New Mexico bluegrass, spike muhly, Thurber fescue, Indiangrass, rush spp., redtop, deergrass, bullgrass, mundula muhly, big squirreltail, pinegrass, black dropseed, oatgrass, Metcalfe muhly, bulb panic, green bristlegrass, muttongrass, pullup muhly, curly mesquite, threeawn spp., creeping muhly, sedge spp., timothy, and Kentucky bluegrass. Other woody species that could appear on this site include: fringed sagewort, snowberry, ceanothus, cliffrose, manzanita, sacahuista, oak spp., yucca spp., sumac spp., and rubber rabbitbrush. Other forbs that could appear on this site include: geranium, vetch, iris, aster, and wild lettuce.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1261	1681	2102
Forb	135	179	224
Total	1396	1860	2326

Table 6. Ground cover

Tree foliar cover	5-10%
Shrub/vine/liana foliar cover	5-10%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	10-30%
Surface fragments >0.25" and <=3"	0%

Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	15-25%

Figure 5. Plant community growth curve (percent production by month).  
 NM1603, R039XB052NM Mountain Valley HCPC. R039XB052NM Mountain  
 Valley HCPC Cool-season perennial mid-grass with components of shrubs  
 and forbs. .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	5	10	25	30	15	7	0	0

## Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1				224–336	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	224–336	–
2				560–785	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	560–785	–
3				112–224	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	112–224	–
4				448–560	
	Arizona fescue	FEAR2	<i>Festuca arizonica</i>	448–560	–
5				224–448	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	224–448	–
6				224–448	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	224–448	–
7				224–448	
	mountain brome	BRMA4	<i>Bromus marginatus</i>	224–448	–
8				336–560	
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	336–560	–
9				112–224	
	pine dropseed	BLTR	<i>Blepharoneuron tricholepis</i>	112–224	–
10				336–448	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	336–448	–
11				112–224	
12				224–336	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	224–336	–
13				67–112	
	common wolfstail	LYPH	<i>Lycurus phleoides</i>	67–112	–
14				224–336	
	needlegrass	ACHNA	<i>Achnatherum</i>	224–336	–
	Letterman's needlegrass	ACLE9	<i>Achnatherum lettermanii</i>	224–336	–

	sleepygrass	ACRO7	<i>Achnatherum robustum</i>	224–336	–
15				112–224	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	112–224	–
<b>Forb</b>					
16				67–112	
	common mullein	VETH	<i>Verbascum thapsus</i>	67–112	–
17				67–112	
	buckwheat	ERIOG	<i>Eriogonum</i>	67–112	–
18				67–112	
	beardtongue	PENST	<i>Penstemon</i>	67–112	–
19				67–112	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	67–112	–
<b>Shrub/Vine</b>					
20				67–112	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	67–112	–
21				112–224	
	Carruth's sagewort	ARCA14	<i>Artemisia carruthii</i>	112–224	–
23				0–67	
24				0–112	
	Shrub, deciduous	2SD	<i>Shrub, deciduous</i>	0–112	–
<b>Tree</b>					
22				0–224	
	juniper	JUNIP	<i>Juniperus</i>	0–224	–
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	0–224	–
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	0–224	–

## Animal community

Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by elk, deer, gray fox, porcupine, chipmunk, desert cottontail, red and rock squirrels, white-throated woodrat, pinyon mouse, golden eagle, red-tailed hawk, common raven, turkey, harlequin quail, band-tailed pigeon, scrubjay, meadowlark, woodpecker, tiger salamander, short-horned lizard, tree lizard, mountain patch-nosed and garter snakes, and black-tailed rattlesnake.

The floodplains of river valleys that support deciduous riparian trees provide a unique habitat that supports a large and diverse wildlife population. Irrigated croplands, where they occur, provide seasonal food concentrations that attract large numbers of birds and other wildlife. In addition to the animals noted above, this habitat supports many species of nesting birds and serves as a migration route for others. Where streams, ponds, and marshes occur, waterfowl, shore and marsh birds, and other wetland species are found.

Bald eagles 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  
Ruidoso-----C  
Sampson-----B

## Recreational uses

This site offers recreation potential for picnicking, camping, horseback riding, nature observation, and photography. Hunting for elk and deer is fair to good depending on density of trees and shrubs on the site and cover on adjacent wooded areas. Natural beauty is enhanced by the mountainous surroundings of the site.

## Wood products

Wood production on this site is limited to a very small amount of fuelwood and fence post material from the few scattered pinyon, juniper, and ponderosa pine.

## Other products

Grazing:

This site is suitable for grazing by all kinds and classes of livestock during spring, summer, and fall. The growing season and grazing season are nearly identical. This puts the more desirable species at a disadvantage. Continuous grazing during this period will result in a decrease of species such as western wheatgrass, prairie junegrass, Arizona fescue, mountain brome, pine dropseed, and sideoats grama. This will cause a corresponding increase in bare ground and species such as blue grama, Kentucky bluegrass, sleepygrass, broom snakeweed, cinquefoil, pinyon, and juniper. A system of grazing that rotates the season of use is most effective in maintaining or improving this plant community.

## Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index-----Ac/AUM

100 - 76-----1.5 – 2.4

75 – 51-----2.2 – 3.0

50 – 26-----2.9 – 4.9

25 – 0-----4.9+

## Type locality

Location 1: Lincoln County, NM
Location 2: Otero County, NM
Location 3: Torrance County, NM

## Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the Arizona and New Mexico Mountains, Major Land Resource Area 39, of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Eddy, Otero, Lincoln, and South Chavez Soil Surveys.

Characteristic Soils Are: Ruidoso, Sampson

## Contributors

Don Sylvester  
Elizabeth Wright

## 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:**
-