

Ecological site R038XB108NM

Basalt Hills

Accessed: 05/18/2024

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.

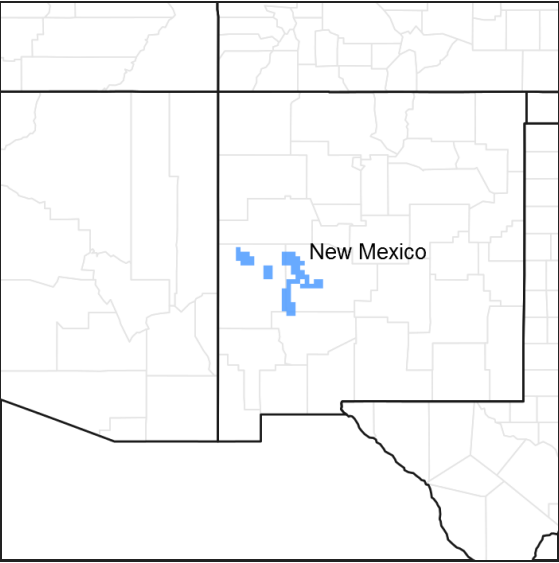


Figure 1. Mapped extent

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

The topography of this site varies from moderately steep to steep. Slopes generally exceed 15 percent and may average 40 percent. Basaltic rocks and sometimes boulders and outcrops are often present in large amounts. Elevation range from about 5,000 to 7,500 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Lava flow
Elevation	1,524–2,286 m
Slope	15–40%
Aspect	Aspect is not a significant factor

## Climatic features

Average annual precipitation varies from about 12 inches to just over 16 inches. Substantial fluctuations from year to year are common, ranging from a low of about 6 inches to a high of over 30 inches. Approximately one-half of the annual precipitation comes in the form of rainfall during the months of July, August, and September, although wintertime precipitation in the form of snow, sleet, or rain is sometimes significant. Spring and late fall months are normally dry.

The average frost-free period ranges from about 165 to 190 days and extends from approximately the third or fourth week in April to mid October. Average annual air temperatures are about 56 degrees F. Summer maximums can exceed 100 degrees F and winter minimums on occasion go below zero. Monthly mean temperatures generally exceed 70 degrees F for the period of June through August.

Growing conditions favor warm-season perennial vegetation, although late winter and late summer precipitation is adequate to foster a significant cool-season component in the potential plant community. Occasional wet springs also create good conditions for annual forb production, but frequent winds from the west and southwest are common during this time of year and tend to deplete soil moisture at a critical time for the growth of these plants.

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)	187 days
Freeze-free period (average)	211 days
Precipitation total (average)	406 mm

## Influencing water features

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

## Soil features

Characteristically, surface textures are stony clay loams, stony loams, cobbly loams, or cobbly clay loams. The soils are very shallow to moderately deep over basalt or deep but stony throughout. Soil, plant, and moisture relationships are good, and soil temperatures may be slightly warmer than those of surrounding soils due to darker color may. Water-holding capacity is low to moderate. Permeability is moderate to moderately slow. Boulders, cobbles, and outcrops may occur frequently and in some instances may impede livestock movement.

**Table 4. Representative soil features**

Surface texture	(1) Stony clay loam (2) Cobbly
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow to moderately slow
Soil depth	25–183 cm
Surface fragment cover ≤3"	15–35%
Surface fragment cover >3"	35–60%
Available water capacity (0-101.6cm)	7.62–22.86 cm
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm

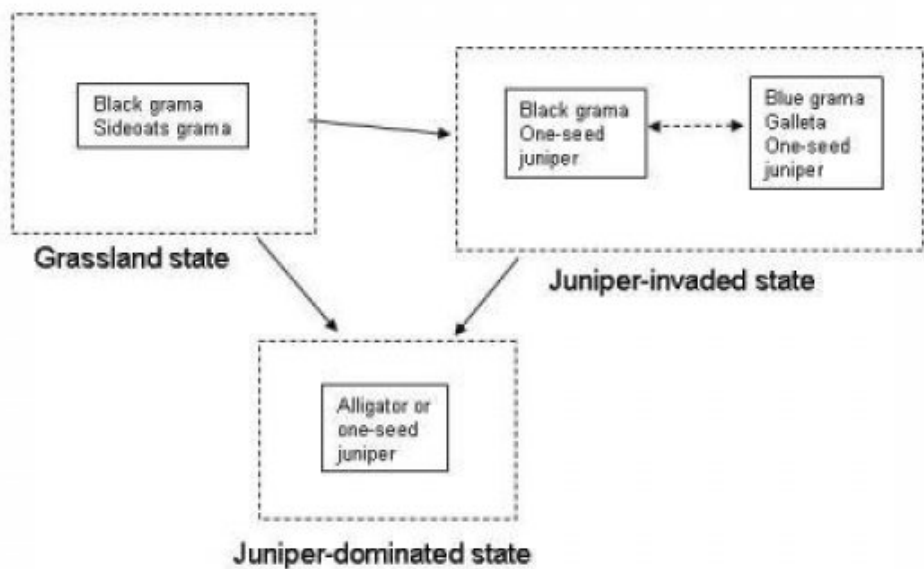
Soil reaction (1:1 water) (0-101.6cm)	6.6–9
Subsurface fragment volume <=3" (Depth not specified)	16–31%
Subsurface fragment volume >3" (Depth not specified)	35–60%

### Ecological dynamics

Continuous yearlong grazing over long periods may, however, result in a decline or disappearance of cool-season grasses and preferred browse plants. If grazing use is heavy and prolonged, plants such as black grama, sideoats grama, and little bluestem will also decrease. Substantial increases in tobosa or galleta, curly mesquite, threeawns, juniper, and oak brush, generally characterize retrogression. This site is particularly suited to grazing by more than one species of animal ( such as goats and cattle, sheep and cattle, and/or wildlife) in order to maintain a healthy balance of woody and herbaceous plants.

### State and transition model

State-Transition model: MLRA 36, WP-2/3, Shallow soils group, Basalt Hills



### State 1 Historic Climax Plant Community

#### Community 1.1 Historic Climax Plant Community

Perennial grasses, such as black grama, sideoats grama, blue grama, green sprangletop, and New Mexico

feathergrass dominate this site. This site is typically open and virtually free of trees. Shrubs and half-shrubs may include Apacheplume, winterfat, Bigelow sagebrush, yerba-de-pasmo, skunkbush sumac, juniper, and shrub live oak. Species of buckwheat are frequently the dominant forbs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	493	852	1211
Forb	81	139	197
<b>Total</b>	<b>574</b>	<b>991</b>	<b>1408</b>

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	5%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	15%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	5%

Figure 5. Plant community growth curve (percent production by month). NM0608, R038XB108NM Basalt Hills HCPC. R038XB108NM Basalt Hills HCPC Grassland with shrub and forb component..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	7	10	15	25	25	8	5	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				267–319	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	267–319	–
2				54–106	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	54–106	–
3				160–213	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	160–213	–
4				106–160	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	106–160	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	106–160	–
	New Mexico feathergrass	HENE5	<i>Hesperostipa neomexicana</i>	106–160	–

	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	106–160	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	106–160	–
5				33–85	
	cane bluestem	BOBA3	<i>Bothriochloa barbinodis</i>	33–85	–
	plains lovegrass	ERIN	<i>Eragrostis intermedia</i>	33–85	–
	green sprangletop	LEDU	<i>Leptochloa dubia</i>	33–85	–
6				11–33	
	vine mesquite	PAOB	<i>Panicum obtusum</i>	11–33	–
7				11–54	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	11–54	–
	tobosagrass	PLMU3	<i>Pleuraphis mutica</i>	11–54	–
8				11–54	
	curly-mesquite	HIBE	<i>Hilaria belangeri</i>	11–54	–
	Hall's panicgrass	PAHA	<i>Panicum hallii</i>	11–54	–
9				11–33	
	threeawn	ARIST	<i>Aristida</i>	11–33	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	11–33	–
10				0–33	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	0–33	–
<b>Forb</b>					
11				11–54	
	scarlet Indian paintbrush	CACO17	<i>Castilleja coccinea</i>	11–54	–
	annual buckwheat	ERAN4	<i>Eriogonum annuum</i>	11–54	–
	bastardsage	ERWR	<i>Eriogonum wrightii</i>	11–54	–
12				33–54	
	Forb, annual	2FA	<i>Forb, annual</i>	33–54	–
13				33–85	
	Forb, perennial	2FP	<i>Forb, perennial</i>	33–85	–
<b>Shrub/Vine</b>					
14				11–33	
	Apache plume	FAPA	<i>Fallugia paradoxa</i>	11–33	–
	pale desert-thorn	LYPA	<i>Lycium pallidum</i>	11–33	–
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	11–33	–
15				11–54	
	Bigelow sage	ARBI3	<i>Artemisia bigelovii</i>	11–54	–
	yerba de pasmo	BAPT	<i>Baccharis pteronioides</i>	11–54	–
	featherplume	DAFO	<i>Dalea formosa</i>	11–54	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	11–54	–
16				0–11	
	hairy mountain mahogany	CEMOP	<i>Cercocarpus montanus var. paucidentatus</i>	0–11	–
	Wright's silktassel	GAWR3	<i>Garrya wrightii</i>	0–11	–
<b>Tree</b>					
17				11–33	

	juniper	JUNIP	<i>Juniperus</i>	11–33	–
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	11–33	–
	oak	QUERC	<i>Quercus</i>	11–33	–

## Animal community

### Habitat for Wildlife:

This ecological site provides habitat which can support a resident animal community characterized by mule deer, cliff chipmunk, rock squirrel, brush mouse, Stephen's woodrat, gray fox, bobcat, ringtail, scrub jay, pinyon jay, harlequin quail, brown towhee, Bewick's wren, plain titmouse, red-shafted flicker, chipping sparrow, ash-throated flycatcher, short-horned lizard, collared lizard, red-spotted toad, black-tailed rattlesnake, mountain patch-nosed snake, and Sonoran mountain kingsnake.

Where cliffs and ledges occur, golden eagle, great horned owl, and prairie falcon hunt. Black-chinned sparrow summers on this site and western bluebird may be seen in the winter. Where adjacent to mountain habitats, elk may range into the site to feed.

## 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

Apache-----D

Cabazon-----D

Majada-----B

Motoqua-----D

Thunderbird-----D

## Recreational uses

This site offers recreation potential for hiking, horseback riding, picnicking, camping, nature observation, photography, bird watching, and hunting for mule deer, quail, and mourning dove. When favorable growing season moisture conditions occur, a colorful display of wildflowers may be seen.

## Wood products

This site has little or no significant value for wood products.

## Other products

### Grazing:

This site is suitable for grazing in all seasons of the year. It is suitable for cattle, sheep, goats, and horses, generally without regard to class of animal or season of use. Continuous yearlong grazing over long periods may, however, result in a decline or disappearance of cool-season grasses and preferred browse plants. If grazing use is heavy and prolonged, plants such as black grama, sideoats grama, and little bluestem will also decrease. Substantial increases in tobosa or galleta, curly mesquite, threeawns, juniper, and oak brush, generally characterize retrogression. This site is particularly suited to grazing by more than one species of animal ( such as goats and cattle, sheep and cattle, and/or wildlife) in order to maintain a healthy balance of woody and herbaceous plants.

## Other information

## Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index-----Ac/AUM

100 - 76-----3.2 – 4.5

75 – 51-----4.3 – 6.6

50 – 26-----6.4 – 10.5

25 – 0-----10.5+

### Type locality

Location 1: Grant County, NM
Location 2: Grant County, NM
Location 3: Catron County, NM
Location 4: Sierra County, NM
Location 5: Socorro County, NM

### Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the New Mexico and Arizona Plateaus and Mesas 36 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Socorro, Sierra, Grant, Catron.

Characteristic Soils Are:

Apache, Cabezon, Thunderbird

Other Soils included are:

Luzena, Majada, Motoqua

### Contributors

Brandon Bestelmeyer

Don Sylvester

Elizabeth Wright

John Tunberg

### 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:**

---