# Ecological site R038XB108NM
# Basalt Hills

Accessed: 11/02/2026

## 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

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 | 1,520 – 2,290 m |
| Slope | 20 – 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) | 190 days |
| Freeze-free period (average) | 210 days |
| Precipitation total (average) | 410 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<br>(2) Cobbly |
| Family particle size | (1) Loamy |
| Drainage class | Well drained |
| Permeability class | Slow to moderately slow |
| Soil depth | 30 – 180 cm |
| Surface fragment cover <=3" | 20 – 40 % |
| Surface fragment cover >3" | 40 – 60 % |
| Available water capacity (0-101.6cm) | 7.62 – 22.86 cm |

| | |
|---|---|
| Electrical conductivity (0-101.6cm) | Not specified |
| Soil reaction (1:1 water) (0-101.6cm) | 6.6 – 10 |
| Subsurface fragment volume <=3" (Depth not specified) | 20 – 30 % |
| Subsurface fragment volume >3" (Depth not specified) | 40 – 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

## Additional community tables

**Table 5. Community 1.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|---|---|---|---|---|---|
| **Grass/Grasslike** | | | | | |
| 1 | | | | 267-319 | |
| | black grama | BOER4 | *Bouteloua eriopoda* | 267-319 | – |
| 2 | | | | 54-106 | |
| | blue grama | BOGR2 | *Bouteloua gracilis* | 54-106 | – |
| 3 | | | | 160-213 | |
| | sideoats grama | BOCU | *Bouteloua curtipendula* | 160-213 | – |
| 4 | | | | 106-160 | |
| | squirreltail | ELEL5 | *Elymus elymoides* | 106-160 | – |
| | needle and thread | HECO26 | *Hesperostipa comata* | 106-160 | – |
| | New Mexico feathergrass | HENE5 | *Hesperostipa neomexicana* | 106-160 | – |
| | western wheatgrass | PASM | *Pascopyrum smithii* | 106-160 | – |
| | little bluestem | SCSC | *Schizachyrium scoparium* | 106-160 | – |
| 5 | | | | 33-85 | |
| | cane bluestem | BOBA3 | *Bothriochloa barbinodis* | 33-85 | – |
| | plains lovegrass | ERIN | *Eragrostis intermedia* | 33-85 | – |
| | green sprangletop | LEDU | *Leptochloa dubia* | 33-85 | – |
| 6 | | | | 11-33 | |

| | | | | | |
|---|---|---|---|---|---|
| | vine mesquite | PAOB | *Panicum obtusum* | 11-33 | – |
| 7 | | | | 11-54 | |
| | James' galleta | PLJA | *Pleuraphis jamesii* | 11-54 | – |
| | tobosagrass | PLMU3 | *Pleuraphis mutica* | 11-54 | – |
| 8 | | | | 11-54 | |
| | curly-mesquite | HIBE | *Hilaria belangeri* | 11-54 | – |
| | Hall's panicgrass | PAHA | *Panicum hallii* | 11-54 | – |
| 9 | | | | 11-33 | |
| | threeawn | ARIST | *Aristida* | 11-33 | – |
| | hairy grama | BOHI2 | *Bouteloua hirsuta* | 11-33 | – |
| 10 | | | | 0-33 | |
| | Graminoid (grass or grass-like) | 2GRAM | *Graminoid (grass or grass-like)* | 0-33 | – |
| **Forb** | | | | | |
| 11 | | | | 11-54 | |
| | scarlet Indian paintbrush | CACO17 | *Castilleja coccinea* | 11-54 | – |
| | annual buckwheat | ERAN4 | *Eriogonum annuum* | 11-54 | – |
| | bastardsage | ERWR | *Eriogonum wrightii* | 11-54 | – |
| 12 | | | | 33-54 | |
| | Forb, annual | 2FA | *Forb, annual* | 33-54 | – |
| 13 | | | | 33-85 | |
| | Forb, perennial | 2FP | *Forb, perennial* | 33-85 | – |
| **Shrub/Vine** | | | | | |
| 14 | | | | 11-33 | |
| | Apache plume | FAPA | *Fallugia paradoxa* | 11-33 | – |
| | pale desert-thorn | LYPA | *Lycium pallidum* | 11-33 | – |
| | skunkbush sumac | RHTR | *Rhus trilobata* | 11-33 | – |
| 15 | | | | 11-54 | |
| | Bigelow sage | ARBI3 | *Artemisia bigelovii* | 11-54 | – |
| | yerba de pasmo | BAPT | *Baccharis pteronioides* | 11-54 | – |
| | featherplume | DAFO | *Dalea formosa* | 11-54 | – |
| | winterfat | KRLA2 | *Krascheninnikovia lanata* | 11-54 | – |
| 16 | | | | 0-11 | |
| | hairy mountain mahogany | CEMOP | *Cercocarpus montanus var. paucidentatus* | 0-11 | – |
| | Wright's silktassel | GAWR3 | *Garrya wrightii* | 0-11 | – |
| **Tree** | | | | | |
| 17 | | | | 11-33 | |
| | juniper | JUNIP | *Juniperus* | 11-33 | – |
| | twoneedle pinyon | PIED | *Pinus edulis* | 11-33 | – |
| | oak | QUERC | *Quercus* | 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 Cabezon----------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

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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):**

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

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

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

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

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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:**

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

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

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

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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:**

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17. **Perennial plant reproductive capability:**

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