

Ecological site R035XH003NM

Cinder Hills

18-22"p.z.

Accessed: 05/22/2026

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.

MLRA notes

Major Land Resource Area (MLRA): 035X–Colorado Plateau

“PROVISIONAL ecological site concepts developed and described. See Project Plan [insert Project Plan Name] for more details and related milestones.”

Ecological site concept

“ATTENTION: This ecological site meets the requirements for PROVISIONAL (if not more). A provisional ecological site is established after ecological site concepts are developed and an initial state-and-transition model is drafted. A provisional ecological site typically will include literature reviews, land use history information, legacy data (prior approved range site descriptions, forage suitability groups, woodland suitability groups, etc.), and includes some soils data, and estimates for canopy and/or species composition by weight,. A provisional ecological site provides the conceptual framework of soil-site correlation for the development of the ESD. For more information about this ecological site, please contact your local NRCS office.”

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is located on the side slopes of cinder cones and the alluvium that came to rest in basalt on hillslopes. Slopes range from 5 to 50 percent. Elevation ranges from 7600 to 9000 feet.

Table 2. Representative physiographic features

Landforms	(1) Caldera (2) Hill
Elevation	2,320 – 2,740 m
Slope	10 – 30 %

Aspect	Aspect is not a significant factor
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Climatic features

The average annual precipitation ranges from 18 to 25 inches. Forty percent occurs during the months of June to September. Most of the summer precipitation comes in the form of high intensity-short duration thunderstorms. Many of these storms are accompanied by hail. Snow accumulation typically occurs from November to March. Typically, depths range from 1 to 4 feet.

The average annual air temperature is about 43 degrees F. However, there are wide ranges in both yearly and daily temperatures. Temperatures may fluctuate as much as 75 degrees F in any 24-hour period. The frost-free period ranges from 80 to 100 days. The last killing frost is in June and the first killing frost is in September.

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)	170 days
Freeze-free period (average)	200 days
Precipitation total (average)	460 mm

Influencing water features

No water feature are regularly associated with this site.

Soil features

These soils are deep, somewhat excessively to well drained and moderate to slow permeability. They formed in eolian and alluvial materials over residuum from cinders and basalt on hillslopes of cinder cones. Slopes are 5 to 25 ppercent but can range as high as 50 percent. Runoff is medium to very high. Available water holding capacity is very low to moderate. Surface texture is typically very gravelly loam. Surface rock fragments (cinders and basalt) range from 15 to 80 percent gravels, 5 to 35 percent cobbles, 0 to 10 percent stones, and 1 percent bolders. Subsoil textures range frm gravelly loam, extremely gravelly coarse sandy loam, and extremely gravelly coarse sand at and near the summits of cinder coans to clay loams and clays on the footslopes of cinder cones. Subsurface rock fragments range from 0 to 20 percent stones. Effective rooting depth is more than 60 inches. Reaction is slightly acid to slightly alkaline.

Characteristic soil include:

Tzoodzil – McKinley County Area Soil Survey; Map Unit 435; Tzoodzil-Amcec association, 5 to 50 percent slopes

Amcec – McKinley County Area Soil Survey; Map Unit 435; Tzoodzil-Amcec association, 5 to 50 percent slopes

Table 4. Representative soil features

Surface texture	(1) Very gravelly loam (2) Stony clay loam
Family particle size	(1) Loamy
Drainage class	Well drained to excessively drained

Permeability class	Moderate to moderately slow
Soil depth	100 – 150 cm

Ecological dynamics

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	mountain muhly			151-252	
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	151-252	–
2	arizona fescue			151-252	
	Arizona fescue	FEAR2	<i>Festuca arizonica</i>	151-252	–
3	muttongrass			10-101	
	muttongrass	POFE	<i>Poa fendleriana</i>	10-101	–
4	prarie junegrass			4-50	
5	bottlebrush squirreltail			6-10	
6	blue grama			7-24	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	7-24	–
Forb					
7	pingue			8-24	
	pingue rubberweed	HYRI	<i>Hymenoxys richardsonii</i>	8-24	–
8	fringed sagewort			9-81	
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	9-81	–
9	wild buckwheat			10-81	
	buckwheat	ERIOG	<i>Eriogonum</i>	10-81	–
10	rocky mountain penstemon			10-81	
	Rocky Mountain penstemon	PEST2	<i>Penstemon strictus</i>	10-81	–
11	fleabane			10-24	
	fleabane	ERIGE2	<i>Erigeron</i>	10-81	–
	fleabane	ERIGE2	<i>Erigeron</i>	10-24	–
12	indian paintbrush			10-24	
	wholeleaf Indian paintbrush	CAIN14	<i>Castilleja integra</i>	10-24	–
13	wooly indianwheat			10-24	
14	nodding onion			10-24	
	nodding onion	ALCE2	<i>Allium cernuum</i>	10-24	–
15	silvery lupine			10-24	
	silvery lupine	LUAR3	<i>Lupinus argenteus</i>	10-24	–
16	skyrocket gilia			10-50	
	ipomopsis	IPOMO2	<i>Ipomopsis</i>	10-50	–
17	mariposa lilly			10-24	
	Gunnison's mariposa lilly	CAGU	<i>Calochortus gunnisonii</i>	10-24	–
Shrub/Vine					

19	gambel oak			101-353	
	Gambel oak	QUGA	<i>Quercus gambelii</i>	101-353	-
20	wax current			10-24	
	wax currant	RICE	<i>Ribes cereum</i>	10-24	-
21	skunkbrush sumac			10-24	
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	10-24	-
22	winterfat			10-24	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	10-24	-
Tree					
23	ponderosa pine			10-50	
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	10-50	-
24	oneseed juniper			10-24	
	oneseed juniper	JUMO	<i>Juniperus monosperma</i>	10-24	-
25	rocky mountain juniper			10-24	
	Rocky Mountain juniper	JUSC2	<i>Juniperus scopulorum</i>	10-24	-
26	pinion pine			10-24	
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	10-24	-

Animal community

Mule deer, elk, coyote, fox, raven, red tailed hawk, golden eagle, bobcat, nuthatches, finches, gray jay, black bear, tassel eared squirrel, merriams turkey, mourning dove, prarie rattlesnake.

Hydrological functions

Soil series - Hydrologic group: Tzoodzil - C Amcec – B

Recreational uses

High value recreational site for aesthetics, camping hiking and picknicking. Numerous showy wildflowers. Excellent mule deer habitat/hunting.

Wood products

Limited wood production.

Other products

This site is suitable for grazing during late spring, summer and early fall. Length of grazing season varies with elevation. At lower elevations the grazing season ranges from May to October; at higher elevations the grazing season runs from June to September. The site is better suited to steers or sheep due to the short season of use. To reduce spot grazing and overuse of more gentle slopes, herding of livestock is needed (especially with sheep) to aid in achieving even distribution. Continuous season-long grazing will cause a decrease of desirable species such as Arizona fescue and prarie junegrass. Increaser species include blue grama, bottlebrush squirreltail and pingue. Invaders include thistles, lupine, and threeawn species. To improve or maintain the plant community, grazing needs to be delayed until soils are firm and plants have made adequate growth to sustain their carbohydrate reserves. A system of deferred grazing, which varies the season of grazing and rest in successive years, is needed. Grazing pressure from domestic livestock must be monitored relative to grazing pressure from wild ungulates to prevent chronic overuse of the forage base.

Other information

guidelines for suggested initial stocking rates similarity index-----acres per AUM 100 to 76-----2 to 2.5 75 to 51-----2.6 to 3.5 50 to 26-----3.6 to 5 less than 25-----5.1 plus

Type locality

Location 1: McKinley County, NM	
Latitude	35° 20' 55"
Longitude	107° 20' 41"
General legal description	About 3.3 miles NW of Marquez, New Mexico. Lat. 35° 20' 55" Long. 107° 20' 41" (unsurveyed)
Location 2: McKinley County, NM	
Latitude	35° 21' 7"
Longitude	107° 27' 10"
General legal description	Marquez Wildlife Area on Mesa Chivato, McKinley County, New Mexico, about 3.2 miles NW of Marquez, New Mexico Lat. 35° 21' 7" Long. 107° 27' 10" (unsurveyed)

Contributors

Joe May
 John Tunberg
 Michael Carpinelli
 Peter Lefebvre

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:
