

**UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE**

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R070XA009NM

Site Name: Shale Hills

Precipitation or Climate Zone: 14 to 16 inches

Phase: _____

PHYSIOGRAPHIC FEATURES

Narrative:

This site is on steep and very steep slopes along the sides of valleys, streams and mesa sides. Elevation ranges from 4,500 to 7,500 feet above sea level. The landscape is characteristically steep and very steep slopes or low escarpments composed of interbedded shale and limestone with soil on moderately steep benches or fans. Slopes are 25 to 50 percent and are on all aspects. North and east-facing slopes usually produce more vegetation than south and west-facing slopes.

Land Form:

1. Hillside
2. Escarpment
- 3.

Aspect:

1. North and east
2. South and west
- 3.

	Minimum	Maximum
Elevation (feet)	4,500	7,500
Slope (percent)	25	50
Water Table Depth (inches)	N/A	N/A
	Minimum	Maximum
Flooding:		
Frequency	N/A	N/A
Duration	N/A	N/A
	Minimum	Maximum
Ponding:		
Depth (inches)	N/A	N/A
Frequency	N/A	N/A
Duration	N/A	N/A

Runoff Class:

Negligible to medium.

CLIMATIC FEATURES

Narrative:

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

Precipitation averages 14 to 16 inches. Seventy seven percent of the year’s moisture normally falls during the period of May through October. Practically all of it is brought by brief afternoon and evening thunderstorms. In July and August, normally the wettest months of the year, one can expect about one day in five when rainfall exceeds one-tenth inch. Early spring precipitation in May benefits the cool-season plants. Winter precipitation, supplying 24 percent of the year’s moisture, normally has no more than two days a month with as much as one-tenth inch of moisture. Much of the winter precipitation falls as snow.

Air temperatures vary from a monthly mean of 20 degrees F in January to 69 degrees F in July. Daily high temperatures average in the 80’s and low 90’s during the summer. Winter low temperatures fall below the freezing mark much of the time from November through March with minimum temperatures approaching 25 degrees F below zero. Dates of the last killing frost may vary from May 9th through May 17th, and the first killing frost from September 27th to October 8th. The frost-free season ranges from 141 days to 153 days from early May to early October.

Wind velocities for the area average 10 to 12 miles per hour and prevail from the south and southwest. Generally, March is the windiest month. Strong winds during the spring cause rapid drying of the soil surface.

Nearby mountains to the west intercept much of the precipitation from the Pacific storms coming through this area during the winter. About 70 percent of the 14 to 16 inches of annual precipitation falls in the form of rainfall during the frost-free season. About 40 percent of the annual precipitation benefits cool-season plants, 50 percent benefits warm-season plants and 10 percent falls during the season of plant dormancy. Relative humidity is moderately low. The sun shines approximately 75 percent of the time.

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.

	Minimum	Maximum
Frost-free period (days):	<u>132</u>	<u>149</u>
Freeze-free period (days):	<u>153</u>	<u>171</u>
Mean annual precipitation (inches):	<u>14</u>	<u>16</u>

Monthly moisture (inches) and temperature (°F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.27	.40	10.4	48.2
February	.26	.43	14.1	52.7
March	.56	.78	20.4	59.6
April	.85	1.20	28.7	67.9
May	1.68	2.49	38.3	76.4
June	1.77	2.21	46.3	85.7
July	2.53	3.43	50.9	88.8
August	2.95	3.57	50.6	86.6
September	1.56	2.02	42.9	80.7
October	1.02	1.20	31.4	71.4
November	.44	.59	19.9	57.6
December	.25	.51	12.3	50.5

Climate Stations:

Station ID	Location	From:	To:	Period
293706	Grenville, NM	01/01/41	12/31/01	
294856	Las Vegas FAA Airport, NM	01/01/41	12/31/01	
295490	Maxwell, NM	01/01/14	12/31/01	
297280	Raton KRTN Radio, NM	12/01/78	12/31/01	
298501	Springer, NM	01/01/14	12/31/01	
299330	Valmora, NM	03/01/17	12/31/01	

INFLUENCING WATER FEATURES

Narrative:

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

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:

N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

These soils are well drained, very shallow to shallow over shale or limestone. Surface texture is clay loam, clay, channery loam, channery clay loam or stony loam. The subsurface layers are usually similar to the surface. Permeability is moderate to slow. Available water-holding capacity is very low to low. Effective rooting depth is 7 to 20 inches. Because of the predominant slopes, the hazard of water erosion is severe.

Parent Material Kind: Marine deposits

Parent Material Origin: Shale-unspecified.

Surface Texture:

1. Clay loam
2. Clay
3. Channery loam
4. Channery clay loam
5. Stony loam

Surface Texture Modifier:

1. Channery
2. Stone
3.

Subsurface Texture Group: Clayey

Surface Fragments ≤3" (% Cover): N/A

Surface Fragments >3" (% Cover): 15 to 35

Subsurface Fragments ≤3" (%Volume): N/A

Subsurface Fragments >=3" (%Volume): 15 to 35

	Minimum	Maximum
Drainage Class:	Well	Well
Permeability Class:	Impermeable	Moderately slow
Depth (inches):	<10	20
Electrical Conductivity (mmhos/cm):	0.00	2.00
Sodium Absorption Ratio:	N/A	N/A
Soil Reaction (1:1 Water):	7.4	8.4
Soil Reaction (0.1M CaCl₂):	N/A	N/A
Available Water Capacity (inches):	0	6
Calcium Carbonate Equivalent (percent):	N/A	N/A

PLANT COMMUNITIES

Ecological Dynamics of the Site:

Plant Communities and Transitional Pathways (diagram)

Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 **Narrative Label:** HCPC

Plant Community Narrative: Historic Climax Plant Community

The structure of the potential natural plant community is predominantly grasses in vegetative production but has the appearance of being dominated by woody species. Grass species are dominated by warm-season mid-grasses. Woody species make up about 35 percent of the vegetation. Juniper, hairy mountainmahogany and oak are the major woody species. Forbs make up 10 percent of the vegetation.

Canopy Cover:

Trees	5 – 10 %
Shrubs and half shrubs	10 – 15 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	20 – 25
Bare ground	10 – 15
Surface gravel	0
Surface cobble and stone	30 – 35
Litter (percent)	10 – 15
Litter (average depth in cm.)	2

Plant Community Annual Production (by plant type): _____

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	360	510	660
Forb	48	68	88
Tree/Shrub/Vine	168	238	308
Lichen			
Moss			
Microbiotic Crusts			
Total	600	850	1,100

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	BOGR2	Blue Grama	128 – 170	128 – 170
2	BOCU	Sideoats Grama	85 – 128	85 – 128
3	SCSC	Little Bluestem	85 – 128	85 – 128
4	PLJA	Galleta	43 – 85	43 – 85
5	PASM	Western Wheatgrass	43 – 85	43 – 85
6	ARIST	Threeawn spp.	26 – 43	26 – 43
7	HENE5 HECO26	New Mexico Feathergrass Needleandthread	26 – 43	26 – 43
8	2GRAM	Other Grasses	26 – 43	26 – 43

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
9	ERIOG	Wildbuckwheat	26 – 43	26 – 43
10	2FA	Other Annual Forbs	26 – 43	26 – 43
11	2FP	Other Perennial Forbs	26 – 43	26 – 43

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
12	PIED JUNIP	Pinyon Pine Juniper spp.	43 – 85	43 – 85
13	CEMOP	Hairy Mountainmahogany	26 – 43	26 – 43
14	ARFR4	Fringed Sagewort	26 – 43	26 – 43
15	FAPA ATCA2	Apacheplume Fourwing Saltbush	26 – 43	26 – 43
16	QUERC	Oak spp.	43 – 85	43 – 85
17	GUSA2	Broom Snakeweed	26 – 43	26 – 43
18	2SD	Other Shrubs	43 – 85	43 – 85

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Other grasses that could appear include: vine-mesquite, prairie junegrass and big bluestem.
 Other shrubs that could appear include: winterfat, skunkbush and Bigelow sagebrush.
 Other forbs that could appear include: asters

Plant Growth Curves

Growth Curve ID 3709NM

Growth Curve Name: HCPC

Growth Curve Description: Grassland with a major component of shrubs and a minor component of forbs.

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	3	5	10	10	25	30	12	5	0	0

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by mule deer, coyote, bobcat, eastern cottontail, rock squirrel, southern plains woodrat, pinyon mouse, great horned owl, ferruginous hawk, plain titmouse, brown towhee, scrubjays, western diamondback rattlesnake and red-spotted toad.

The mountain lion hunts through these habitats. There is seasonal use by band pigeons in years of heavy mast production.

Hydrology Functions:

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations

Soil Series	Hydrologic Group
Litle	D
Mion	D
Penrose	D

Recreational Uses:

This site has good aesthetic appeal and natural beauty with its large variety of plants and the physiographic features breaks the open space of the landscape. Hiking is fair to good, camping and picnicking poor to fair. Hunting for deer is good. This site is a good range for deer. Bird watching is fair.

Wood Products:

Some limited harvest of pinyon and juniper for fence posts and firewood.

Other Products:

Grazing:

This site is adapted for spring, summer and fall grazing. Distribution of domestic livestock is a problem on this site. All ages and classes prefer to graze flatter slopes leaving the steeper slopes ungrazed. It is better suited to a younger age livestock. Goats would be best suited to utilize the large amount of woody species in the plant community. Approximately 70 percent of the total annual yield are from species that furnish forage for grazing and browsing animals. The large variety of grasses, forbs and shrubs provide a good balance feed and excellent nutrition for all grazing animals. Continuous grazing during the growing season will cause the more desirable forage plants such as sideoats grama, little bluestem, western wheatgrass, hairy mountainmahogany, New Mexico feathergrass and winterfat decrease. Species most likely to increase are blue grama, galleta, threeawn, oneseed juniper, sleepygrass and oak brush. As the condition deteriorated, it is accompanied by a sharp increase of oneseed juniper and oak. The ground cover is greatly reduced causing excessive erosion, which exposes the unweathered shale. A system of deferred grazing, which varies the time of grazing and rest in a pasture during successive years, is needed to maintain or improve the plant community. Rest during April, May and June allows the western wheatgrass to grow and reproduce. Rest during the late winter and early spring is beneficial to shrubs such as hairy mountainmahogany.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	3.4 – 4.6
75 – 51	4.5 – 6.8
50 – 26	6.7 – 12.6
25 – 0	12.6+

Plant Part	Code	Species Preference	Code
Stems	S	None Selected	NS
Leaves	L	Preferred	P
Flowers	F	Desirable	D
Fruits/Seeds	F/S	Undesirable	U
Entire Plant	EP	Not Consumed	NC
Underground Parts	UP	Emergency	E
		Toxic	T

Plant Preference by Animal Kind:

Animal Kind: Livestock

Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences												
			J	F	M	A	M	J	J	A	S	O	N	D	
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	P	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P	P
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
New Mexico Feathergrass	Hesperostipa neomexicana	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
Needleandthread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
Hairy Mountainmahogany	Cercocarpus montanus	L/S	U	U	U	D	D	D	U	U	U	U	U	U	U
Fourwing Saltbush	Atriplex canescens	L/S	P	P	P	P	P	D	D	D	D	D	D	D	P

Animal Kind: Livestock

Animal Type: Horse

Common Name	Scientific Name	Plant Part	Forage Preferences												
			J	F	M	A	M	J	J	A	S	O	N	D	
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	P	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P	P
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D	D

Animal Kind: Livestock

Animal Type: Sheep

Common Name	Scientific Name	Plant Part	Forage Preferences												
			J	F	M	A	M	J	J	A	S	O	N	D	
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	P	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	D	D	D	D	P	P	P	P	P	P	D	D	D
Broom Snakeweed	Gutierrezia sarothrae	L	D	D	U	U	U	U	U	U	U	U	U	U	D

Animal Kind: Wildlife

Animal Type: Antelope

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Needleandthread	Hesperostipa comata	EP	U	U	D	D	D	U	U	U	D	D	D	U
Pinyon	Pinus edulis	F/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Apacheplume	Fallugia paradoxa	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Fourwing Saltbush	Atriplex canescens	L/S	P	P	D	D	D	D	D	D	D	D	D	P

Animal Kind: Wildlife

Animal Type: Deer

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Hairy Mountainmahogany	Cercocarpus montanus	L/S	P	P	P	P	P	P	P	P	P	P	P	P
Needleandthread	Hesperostipa comata	EP	U	U	D	D	D	U	U	U	D	D	D	U
Pinyon	Pinus edulis	F/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Apacheplume	Fallugia paradoxa	L/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative

Similar sites:

Site Name	Site ID	Site Narrative

State Correlation:

This site has been correlated with the following sites: _____

Inventory Data References:

Data Source	# of Records	Sample Period	State	County

Type Locality:

State: New Mexico

County: Colfax, Mora, Union

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? Yes No

General Legal Description: _____

Relationship to Other Established Classifications:

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Other References:

Data collection for this site was done 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 with soils in the following soil surveys: Colfax, Mora, San Miguel, Union.

Characteristic Soils Are:

Litle	Mion
Penrose	

Other Soils included are:

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Site Description Approval:

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Don Sylvester	04/25/80	Durwood E. Ball	04/29/80

Site Description Revision:

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
Elizabeth Wright	08/22/02	George Chavez	12/17/02