UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R048AY005NM

Site Name: Mountain Malpais

Precipitation or Climate Zone: 15 to 30 inches

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

This site is characterized by flat to moderately steep topography. It is frequently found as mesa tops where the basalt cap is present. The site's terrain may be interrupted by extrusions of the basalt, leaving a rough or choppy appearance to the topography. The basaltic stone cover typically exists over a portion of the site where igneous extrusions occur. Boulders on the surface are common. Slopes are less than 25 percent. The dominant slope range is from 0 to 10 percent. The exposure varies but has little significance on plant production. Elevation ranges from 6,500 to 9,000 feet above sea level.

Land Form:

1. Lava flow
2. Mesa
3.

Aspect:

1. N/A
2.
3.

	Minimum	Maximum
Elevation (feet)	6,500	9,000
Slope (percent)	0	<25
Water Table Depth (inches)	12	>72

Flooding:	**Minimum**	**Maximum**
Frequency	Rare	Frequent
Duration	Very brief	Long

Ponding:	**Minimum**	**Maximum**
Depth (inches)	0	40
Frequency	Rare	Frequent
Duration	Brief	Brief

Runoff Class:

Negligible to very high.

CLIMATIC FEATURES

Narrative:

Climate conditions for this site are typical of the lower elevational limits of the Rocky Mountains. Average annual precipitation ranges from 16 to 22 inches. Most of the precipitation received is in the form of rain from heavy thunderstorms during the hottest summer months. Winter and spring moisture is an important facet of this site and determines production of the cool-season species. Summer moisture received during the principal growing season of July, August and September determines the production of the principal warm-season grasses. Summer precipitation accounts for approximately 60 percent of the total annual precipitation, although at a moderately high elevation, the climatic features of this site are not too unlike sites at lower elevations in that precipitation amounts fluctuate greatly from year to year. Annual amounts commonly range from 8 to 35 inches. Spring precipitation in the latter part of March may be sufficient in some years to contribute greatly to the production of both warm and cool-season forage plants.

Air temperatures vary from a monthly mean of 29 degrees F in January to 69 degrees F in July. Daily high temperatures average in the 80's during the summer. Winter low temperatures fall below the freezing mark much of the time from mid-September through April. Date of the last killing frost is approximately May 15th. The first killing frost is approximately October 3rd. The dates of the last killing frost and the first killing frost vary from lower elevations to the higher elevation points.

The frost-free season ranges from 90 to 140 days, from mid-May through early October. The frost-free period is important only in the limiting of the production of the warm-season species that are present on the site.

Mountain winds are an important part of the climatic complex of this site, because of their indirect effect on soil and moisture and translocation of seed.

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):	103	144
Freeze-free period (days):	127	169
Mean annual precipitation (inches):	15	30

Monthly moisture (inches) and temperature (^{0}F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.32	.88	14.2	46.8
February	.33	1.13	16.7	50.0
March	.62	1.79	20.4	55.7
April	.81	1.71	25.6	63.6
May	1.12	2.00	33.3	72.7
June	1.26	2.27	40.6	82.4
July	2.68	4.24	44.9	84.9
August	2.87	4.48	44.0	81.8
September	1.63	1.92	38.1	76.8
October	1.05	1.64	29.2	67.7
November	.56	1.15	20.3	55.6
December	.41	1.06	14.5	48.7

Climate Stations:

				Period		
Station ID	291813	Location	Cimarron 4SW, NM	From: 5/1/1904	To:	12/31/01
Station ID	293488	Location	Gascon, NM	From: 11/18/53	To:	12/31/01
Station ID	296275	Location	Ocate 1N, NM	From: 08/01/60	To:	12/31/01
Station ID	296676	Location	Pecos Ranger Station, NM	From: 01/01/16	To:	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, shallow to deep, and formed in debris from basalt. The surface texture is cobbly loam, cobbly silt loam, cobbly clay loam, stony fine sandy loam, stony loam, stony silt loam and stony clay loam. The texture of the subsoil layers is stony or cobbly loam, clay loam or clay. Permeability is moderately slow. Available water-holding capacity is low to high. The effective rooting depth is 8 to 60 inches. Air-water-plant relationship is favorable for plant growth. The basalt fragments make up 5 to 35 percent of the soil and occupy 5 to 35 percent of the surface.

Parent Material Kind: Volcanic ash
Parent Material Origin: Basalt

Surface Texture:

1. Silty loam
2. Loam
3. Clay loam
4. Stony silt loam
5. Very stony silt loam
6. Cobbly silt loam
7. Cobbly loam
8. Cobbly clay loam
9. Stony fine sandy loam
10. Stony loam
11. Stony clay loam

Surface Texture Modifier:

1. Cobble
2. Stone
3.

Subsurface Texture Group: Loamy
Surface Fragments <=3" (% Cover): N/A
Surface Fragments >3" (% Cover): 35 to 60

Subsurface Fragments <=3" (%Volume): >60
Subsurface Fragments >=3" (%Volume): >60

	Minimum	Maximum
Drainage Class:	Poorly	Well
Permeability Class:	Impermeable	Moderately slow
Depth (inches):	6	>72
Electrical Conductivity (mmhos/cm):	0.00	4.00
Sodium Absorption Ratio:	0.00	5.00
Soil Reaction (1:1 Water):	5.1	8.4
Soil Reaction (0.1M CaCl2):	N/A	N/A
Available Water Capacity (inches):	3	12
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
This site is a grassland characterized by warm-season and cool-season mid-grasses and bunch grasses, which make up approximately 80 percent of the composition of the plant community. Woody shrubs and half-shrubs are widely scattered throughout the site and make up approximately 5 percent of the composition of the plant community. Forbs are a minor component and make up approximately 10 percent of the composition of the plant community. Tree species associated with this site which are seen widely scattered are ponderosa pine, pinyon pine and oneseed juniper. The overstory canopy is less than 5 percent.

Canopy Cover:	
Trees	<5 %
Shrubs and half shrubs	5 %
Ground Cover (Aveage Percent of Surface Area).	
Grasses & Forbs	30
Bare ground	25
Surface gravel	-
Surface cobble and stone	25
Litter (percent)	15
Litter (average depth in cm.)	2

Plant Community Annual Production (by plant type):

Annual Production (lbs/ac)

Plant Type	Low	RV	High
Grass/Grasslike	320	720	960
Forb	40	90	120
Tree/Shrub/Vine	20	45	60
Lichen			
Moss			
Microbiotic Crusts			
Total	400	900	1,200

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	BOHI2 BOGR2	Hairy Grama Blue Grama	162 – 180	162 – 180
2	PASM	Western Wheatgrass	108 – 135	108 – 135
3	FEAR	Arizona Fescue	72 – 90	72 – 90
4	MUMO	Mountain Muhly	72 – 90	72 – 90
5	SCSC	Little Bluestem	72 – 90	72 – 90
6	BOCU	Sideoats Grama	72 – 90	72 – 90
7	ACNEN2 ACHY KOMA	Columbia Needlegrass Indian Ricegrass Prairie Junegrass	27 – 45	27 – 45
8	PLJA SPCR MURI MUTO2 ARIST CAREX	Galleta Sand Dropseed Mat Muhly Ring Muhly Threeawn spp. Sedge spp.	27 – 45	27 – 45
9	2GRAM	Other Grasses	27 – 45	27 – 45

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
10	VICIA HYRI TRIFO ERIOG SPHAE	Vetch spp. Pingue Clover spp. Buckwheat spp. Globemallow spp.	27 – 45	27 – 45
11	2FORB	Other Forbs	27 – 45	27 – 45

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
12	ERNAN5 CEMOP RHTR KRLA2 ATCA2 QUERC 2SD	Rubber Rabbitbrush Hairy Mountainmahogany Skunkbush Sumac Winterfat Fourwing Saltbush Oak spp. Other Shrubs	27 – 45	27 – 45

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 species that could appear include: pine dropseed, bottlebrush squirreltail, vine-mesquite, deergrass, bullgrass, big bluestem, Indiangrass, sagebrush spp., broom snakeweed and horsebrush.

Plant Growth Curves

Growth Curve ID **3105NM**

Growth Curve Name: **HCPC**

Growth Curve Description: **Mixed cool/warm-season mid and bunch grasses grassland with minor components of shrubs and 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 pika, Colorado chipmunk, short horned lizard and prairie rattlesnake. Elk and mule deer will use these sites seasonally.

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**
Apache	D
Bywell	D
Chamita	C
Crubas	D
Dalcan	C
Des Moines	C
Dula	D
Fallsan	D
Hetz	B, D
Jarola	C
Jicarilla	C
Nusmag	D
Raton	D
Tottles	C
Vastine	B

Recreational Uses:

This site provides limited recreation potential for camping, hiking and picnicking as well as horseback riding and photography. The site has a numerous variety of flowers, which bloom from spring to late, fall. Hunting for deer and rabbits is fair.

Wood Products:

This site produces no wood products except for limited firewood for campfires.

Other Products:

Grazing:

This site is best grazed during the spring, summer and fall, except where it occurs interspersed with the higher mountain ecological sites. Approximately 80 percent of the total annual yield are from species that furnish forage for grazing animals. The large variety of grasses, forbs and shrubs furnish a well-balanced feed and excellent nutrition for all grazing animals. Following a normal or mild winter, this site will green up earlier than the other mountain ecological sites. The site is best suited for cattle. The site is better suited to a younger age of livestock due to the rocky surface. With continuous grazing through the entire season by cattle, species such as Arizona fescue, mountain muhly, little bluestem and sideoats grama will decrease in percentage of the composition. Species most likely to invade are Kentucky bluegrass, sleepygrass and annual forbs. As the ecological conditions deteriorate, these species will move in at the expense of the more desirable grasses. Species most likely to increase as the ecological conditions deteriorate are blue grama, ring muhly, threeawn, rabbitbrush, skunkbush sumac and broom snakeweed. A system of deferred grazing, which varies the season of grazing and rest during successive years in a pasture, is needed to maintain a healthy, vigorous, well-balanced plant community. Deferment during the different seasons of the year benefits different species of plants. Species such as western wheatgrass, Arizona fescue, Columbia needlegrass, Indian ricegrass and prairie junegrass will benefit from the spring and early summer rest. Species such as blue grama, mountain muhly, little bluestem and sideoats grama will benefit from a summer early fall rest.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	2.5 – 4.0
75 – 51	2.9 – 5.0
50 – 26	3.7 – 9.5

25 – 0	9.5+

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
Mountain Muhly	Muhlenbergia montana	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Arizona Fescue	Festuca arizonica	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Columbia Needlegrass	Achnatherum nelsonii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Prairie Junegrass	Koeleria macrantha	EP	D	D	D	D	D	D	D	D	D	D	D	D
Little Bluestem	Schizachyrium scoparium	EP	D	D	D	P	P	P	P	D	D	D	D	D
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P
Sedge	Carex spp.	EP	D	D	D	D	D	D	D	D	D	D	D	D
Hairy Mountainmahogany	Cercocarpus montanus	EP	U	U	U	D	D	D	U	U	U	U	U	U
Winterfat	Krascheninnikovia lanata	L/S	D	D	P	P	P	P	P	P	D	D	D	D
Fourwing Saltbush	Atriplex canescens	L/S	P	P	P	P	P	D	D	D	D	D	D	P
Clover	Trifolium spp.	EP	P	P	P	P	P	P	P	P	P	P	P	P
Vetch	Vicia spp.	EP	D	D	P	P	P	P	P	P	D	D	D	D
Globemallow	Sphaeralcea spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U

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
Arizona Fescue	Festuca arizonica	EP	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Prairie Junegrass	Koeleria macrantha	EP	U	U	D	D	D	U	U	U	U	U	U	U
Western Wheatgrass	Pascopyrum smithii	EP	U	U	D	D	D	D	D	D	D	D	D	U
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	D	D	D	D	D	D	P
Clover	Trifolium spp.	EP	P	P	P	P	P	P	P	P	P	P	P	P
Buckwheat	Eriogonum spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Vetch	Vicia spp.	EP	D	D	P	P	P	P	P	P	D	D	D	D
Globemallow	Sphaeralcea spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Winterfat	Krascheninnikovia lanata	L/S	P	P	P	P	P	P	P	P	P	P	P	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	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
Winterfat	Krascheninnikovia lanata	L/S	D	D	D	D	D	D	D	D	D	D	D	D
Clover	Trifolium spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Vetch	Vicia spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Oak	Quercus spp.	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**

Latitude: _____

Longitude: _____

Township: _____

Range: _____

Section: _____

Is the type locality sensitive? **Yes** ☐ **No** ☐

General Legal Description: _____

Relationship to Other Established Classifications:

Other References:

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Rocky Mountains 48 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Colfax, Taos, Mora, San Miguel, and Santa Fe.

Characteristic Soils Are:	
Apache, Bywell, Chamita, Crubas, Dalcan	Des Moines, Dula, Fallsan, Hetz, Jarola
Jicarilla, Nusmag, Raton, Tottles, Vastine	
Other Soils included are:	

Site Description Approval:

Author	Date	Approval	Date
Don Sylvester	09/01/78	Don Sylvester	09/01/78

Site Description Revision:

Author	Date	Approval	Date
Elizabeth Wright	09/23/02	George Chavez	2/12/03