UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R036XB109NM

Site Name: Malpais (WP-2, WP-3)

Precipitation or Climate Zone: 10 to 16 inches

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

Topography of this site is nearly level to moderately sloping, with slopes ranging to 15 percent. The terrain may frequently be interrupted by basalt outcrops, rocks, or boulders. It occurs as lava flows, usually across broad areas and over uniform slopes. Low hills, narrow breaks, or knobs may however, break this uniformity in slopes, as may dissecting arroyos, and potholes. Elevation range from about 5,000 to 7,500 feet above sea level.

Land Form:

1. Lava flow
2. Lava plain
3.

Aspect:

1. N/A
2.
3.

	Minimum	Maximum
Elevation (feet)	5,000	7,500
Slope (percent)	0	15
Water Table Depth (inches)	N/A	N/A

Flooding:	**Minimum**	**Maximum**
Frequency	N/A	N/A
Duration	N/A	N/A

Ponding:	**Minimum**	**Maximum**
Depth (inches)	N/A	N/A
Frequency	N/A	N/A
Duration	N/A	N/A

Runoff Class:

Negligible to medium.

CLIMATIC FEATURES

Narrative:

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 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.

	Minimum	Maximum
Frost-free period (days):	102	148
Freeze-free period (days):	119	174
Mean annual precipitation (inches):	10	16

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

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.40	.91	12.9	47.0
February	.43	.65	16.6	51.2
March	.47	1.10	20.9	57.1
April	.30	.49	26.1	65.3
May	.46	.98	33.4	74.2
June	.51	.57	41.4	84.2
July	2.15	3.45	50.4	85.1
August	2.28	3.03	48.8	82.4
September	1.29	1.68	41.4	77.9
October	.81	1.12	29.4	69.2
November	.38	.71	19.1	57.3
December	.53	.95	13.1	48.9

Climate Stations:

				Period		
Station ID	290640	Location	Augustine 2E, NM	From: 05/01/26	To:	07/31/00
Station ID	296812	Location	Pietown 19NE, NM	From: 09/01/88	To:	07/31/00
Station ID	297180	Location	Quemado, NM	From: 08/01/15	To:	07/31/00

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:

Surface textures vary from fine sandy loams, loams, clay loams and silty clay loams. Rock fragments range from 0 to 35 percent. The soils are very shallow to shallow over basalt and may be calcareous in the surface or subsoils. Subsoils are moderately fine and fine textured. Water permeability is moderate to slow. Depending on depth, available water-holding capacity is very low to low.

Parent Material Kind: Volcanic ash
Parent Material Origin: Basalt

Surface Texture:

1. Fine sandy loam
2. Loam
3. Clay loam
4. Silty clay loam

Surface Texture Modifier:

1. Stony
2. Cobbly
3. Gravel

Subsurface Texture Group: Loamy
Surface Fragments <=3" (% Cover): 15 to 35
Surface Fragments >3" (% Cover): 15 to 35

Subsurface Fragments <=3" (%Volume): 15 to 35
Subsurface Fragments >=3" (%Volume): 35 to 60

	Minimum	Maximum
Drainage Class:	Well	Well
Permeability Class:	Slow	Moderate
Depth (inches):	14	35
Electrical Conductivity (mmhos/cm):	0	<2
Sodium Absorption Ratio:	N/A	N/A
Soil Reaction (1:1 Water):	6.6	7.3
Soil Reaction (0.1M CaCl2):	N/A	N/A
Available Water Capacity (inches):	0	6
Calcium Carbonate Equivalent (percent):	N/A	N/A

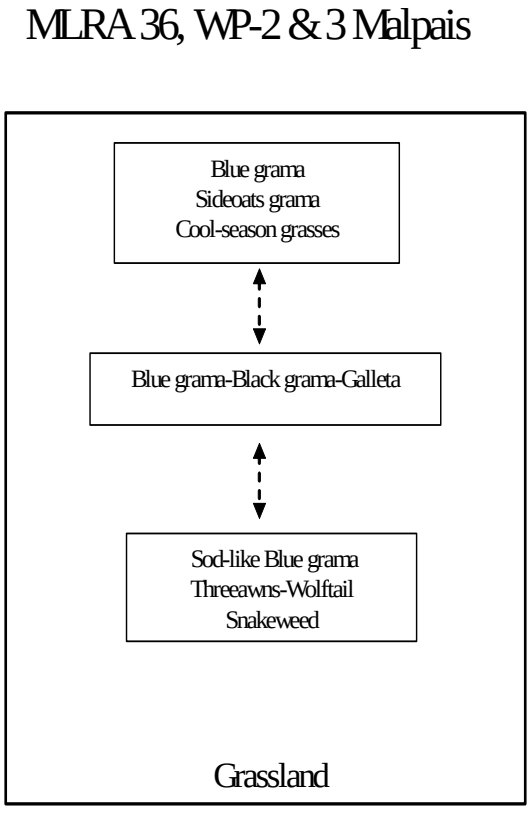
PLANT COMMUNITIES

ECOLOGICAL DYNAMICS OF THE SITE:

Overview

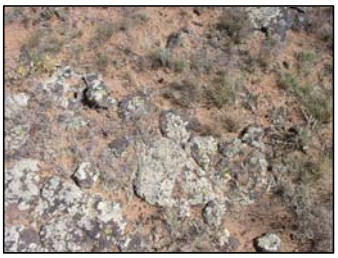
The Malpais site occurs on basalt capped mesas tops, low hills and ridges, and on old lava flows. The soils are shallow over basalt and often cobbly or stony. This site is often associated with Loamy sites. The Loamy site can occur as low valleys dissecting the hills, ridges and old lava flows, or Loamy sites may occur with Malpais sites, as pockets of deeper soils on mesa tops. This is predominantly a grassland site characterized by a mixture of warm and cool-season grasses, scattered shrubs, and a few trees. Blue grama and sideoats grama are the dominant grasses. Woody species may include winterfat, fourwing saltbush, piñon and juniper. This site appears to be highly resistant to state change, as no alternate states were identified during our inventory. This resistance may be due in part to the high volume of rock fragments that occur on the soil surface, strong argillic horizons, and a shallow depth to bedrock. The cobbles and stones on the soil surface may help to protect the site from accelerated erosion and limit grazing accessibility by protecting grass bases. Argillic horizons and basalt bedrock can help to keep water perched and available, favoring shallow rooted grasses.

Plant Communities and Transitional Pathways (diagram)



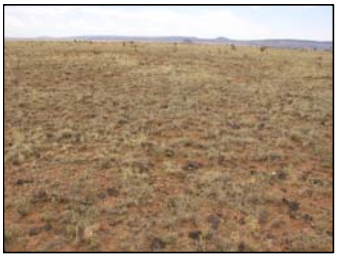
MLRA 36; WP-2; Malpais

Grassland



•Blue grama, galleta, black grama, with few scattered juniper.
•Juniper heavier in adjacent Loamy site.
•Grass cover uniformly distributed.
•Note amount of rock cover.
•Viuda very cobbly sandy loam, Cibola Co., NM.

Grassland



•Black grama, galleta, blue grama, with a few scattered yucca, winterfat, 4-Wing saltbush, and cholla.
•Grass cover uniformly distributed.
•Berto Soil series, Cibola Co., NM.

Plant Community Name: Historic Climax Plant Community

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

Plant Community Narrative: State Containing Historic Climax Plant Community
Grassland: Grasses are the dominant component of the historic plant community accounting for 75 to 85 percent of the total production. Blue grama and sideoats grama are the dominant grasses. Also characteristic are such species as western wheatgrass, little bluestem, spike muhly, alkali sacaton, black grama, galleta, and New Mexico feathergrass. Winterfat, fourwing saltbush, and broom snakeweed are common shrubs. A few piñon and juniper may be found widely scattered across the site. Changes in composition to the historic plant community may occur due to continuous heavy grazing. Typically, there is a decrease in cool season grasses, sideoats grama, little bluestem, and spike muhly. Communities dominated by blue grama, galleta, and black grama may result. Any of the three species may assume dominance depending on individual site characteristics. Blue grama seems to be the most grazing resistant species and under continued heavy use, a sod-like blue grama dominated community may result. Other species that are typically found in this community include threeawns, wolftail and snakeweed.

Diagnosis: Grass composition is variable and cover ranges from uniform to patchy, with numerous small, spatially separated, bare patches. Shrubs and a few trees may be present on the site with a combined canopy cover averaging seven percent. Evidence of erosion such as pedestalling of grasses, rills, and gullies is limited.

Canopy Cover:	
Trees	7 %
Shrubs and half shrubs	7 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	23
Bare ground	8
Surface gravel	15
Surface cobble and stone	40
Litter (percent)	14
Litter (average depth in cm.)	2

Plant Community Annual Production (by plant type):

Annual Production (lbs/ac)

Plant Type	Low	RV	High
Grass/Grasslike	340	610	880
Forb	43	77	110
Tree/Shrub/Vine	43	77	110
Lichen			
Moss			
Microbiotic Crusts			
Total	425	763	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	153 – 191	153 – 191
2	BOCU	Sideoats Grama	76 – 114	76 – 114
3	PASM SPAI MUWR	Western Wheatgrass Alkali Sacaton Spike Muhly	76 – 114	76 – 114
4	BOER4	Black Grama	8 – 38	8 – 38
5	HENE2 HECO26	New Mexico Feathergrass Needleandthread	38 – 114	38 – 114
6	SCSC BOBA3	Little Bluestem Cane Bluestem	8 – 38	8 – 38
7	PLJA PLMU3	Galleta Tobosa	8 – 38	8 – 38
8	HIBE SPORO	Curly Mesquite Dropseed spp.	23 – 38	23 – 38
9	ARIST	Threeawn spp.	8 – 23	8 – 23
10	ELEL5	Bottlebrush Squirreltail	8 – 23	8 – 23
11	LYPH	Wolftail	8 – 23	8 - 23

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
12	ERWR ERAN4	Wright Buckwheat Annual Buckwheats	8 – 38	8 – 38
13	2FA	Other Annual Forbs	8 – 38	8 – 38
14	2FP	Other Perennial Forbs	8 – 23	8 - 23

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
15	QUERC	Shrub Live Oak spp.	8 – 23	8 – 23
16	PIED JUNIP	Pinyon Pine Juniper	8 – 46	8 – 46
17	ERNAN5 FAPA	Rubber Rabbitbrush Apacheplume	8 – 23	8 – 23
18	KRLA2	Winterfat	23 – 61	23 – 61
19	RHTR	Skunkbush Sumac	8 – 23	8 – 23
20	GUSA2	Broom Snakeweed	0 – 8	0 - 8

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

Plant Growth Curves

Growth Curve ID **0301NM**

Growth Curve Name: **HCPC**

Growth Curve Description: **Mixed warm/cool-season perennial grassland w/ shrub and half-shrub component.**

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	5	7	10	15	25	25	8	5	0	0

Catalog of states and community pathways

Additional States: None identified at this time.

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This site provides habitat which can support a resident animal community characterized by mule deer, rock squirrel, brush mouse, Stephen's woodrat, gray fox, bobcat, scaled quail, ladderbacked woodpecker, scrub jay, common bushtit, rock wren, brown towhee, rufous-crowned sparrow, chipping sparrow, ash-throated flycatcher, short-horned lizard, collared lizard, Eastern fence lizard, tree lizard, red-spotted toad, and black-tailed rattlesnake.

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
Cabezon	D
Flaco	C
Modyon	C
Prieta	D
Rudd	D
Thunderbird	D
Viuda	D

Recreational Uses:

This site offers recreation potential for hiking, picnicking, camping, nature observation and photography, bird watching, and hunting for mule deer, mourning dove, and quail. 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 best adapted for cattle and horses, but can also be utilized by sheep and goats. Continuous yearlong grazing may, however, result in a decline or disappearance of cool-season grasses and preferred browse plants. If grazing use is heavy or prolonged, such plants as sideoats grama, little bluestem, spike muhly, and black grama will also decrease. Ordinarily, as retrogression continues, blue grama, tobosa or galleta, curly mesquite, threeawns, and broom snakeweed begin to dominate. Eventually, even blue grama may decline. The site is not highly erodible, and recovery can be affected through good grazing management at a reasonably rapid rate.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	**Ac/AUM**
100 - 76	3.0 – 4.2
75 – 51	4.0 – 6.5
50 – 26	6.0 – 10.0
25 – 0	10.0+

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
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	D	D	D
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	P	P
Little Bluestem	Schizachyrium scoparium	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
Green Sprangletop	Leptochloa dubia	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
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	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
Vine-mesquite	Panicum obtusum	EP	D	D	D	D	D	D	D	D	D	D	D	D
Spike Muhly	Muhlenbergia wrightii	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
Wright Buckwheat	Eriogonum wrightii	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

Animal Kind: Livestock
Animal Type: Horses

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
Blue Grama	Bouteloua gracilis	EP	D	D	D	D	P	P	P	P	P	D	D	D
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	P	P
Little Bluestem	Schizachyrium scoparium	EP	D	D	D	P	P	P	P	D	D	D	D	D
Green Sprangletop	Leptochloa dubia	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
New Mexico Feathergrass	Hesperostipa neomexicana	EP	D	D	P	P	P	D	D	D	D	D	D	D
Western Wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Vine-mesquite	Panicum obtusum	EP	D	D	D	D	D	D	D	D	D	D	D	D
Spike Muhly	Muhlenbergia wrightii	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
Cane Bluestem	Bothriochloa brabinodis	EP	U	U	U	U	U	U	P	P	D	U	U	U

Animal Kind: Wildlife

Animal Type: Mule deer

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Juniper	Juniperus spp.	F/S	P	P	U	U	U	U	U	U	U	U	U	P
Shrub Live Oak	Quercus spp.	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
Skunkbush Sumac	Rhus trilobata	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
New Mexico Feathergrass	Hesperostipa neomexicana	EP	U	U	D	D	D	U	U	U	D	D	D	U
Wildbuckwheat	Eriogonum spp.	EP	U	U	D	D	D	D	D	D	U	U	U	U
Winterfat	Krascheninnikovia lanata	EP	D	D	D	D	D	D	D	D	D	D	D	D
Most Other Forbs	Various	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

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: **Catron, McKinley, Valencia**

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 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: McKinley, Cibola, Sandoval.

Characteristic Soils Are:	
Apache	Prieta
Berto	
Other Soils included are:	
Cabezon	Flaco
Modyon	Rudd
Thunderbird	Viuda

Site Description Approval:

Author	Date	Approval	Date
Don Sylvester	05/21/84	Don Sylvester	05/21/84

Site Description Revision:	Date	Approval	Date
David Trujillo	12/16/05	George Chavez	3/2/05