UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R036XB114NM

Site Name: Gravelly

Precipitation or Climate Zone: 10 to 16 inches

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

The topography of this site ranges from gently to strongly sloping and may occur as low rolling hills and ridges dissected by natural arroyos or in combination with rock outcrop and badlands which are on very steep slopes. Average slopes are less than 15 percent, and aspect is variable. Elevation range from about 6,000 to 7,300 feet above sea level.

Land Form:

1. Hillside
2. Ridge
3.

Aspect:

1. N/A
2.
3.

	Minimum	Maximum
Elevation (feet)	6,000	7,300
Slope (percent)	<15	>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 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

The average frost-free season is about 120 days and extends from approximately mid-May to early or mid September. Average annual air temperatures are 50 degrees F or lower and summer maximums rarely exceed 100 degrees F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70 degrees F for the period of July and August.

Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on any given range site which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm/cool-season dominants are present.

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	48.7	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:

The soils are moderately deep to deep. The surface and underlying layers are either gravelly or very gravelly loams, sandy loams, and fine sandy loams. The soils are well drained and moderately to rapidly permeable. The available water-holding capacity is moderate to low. Erosion is normally none to slight unless natural plant cover is seriously reduced

Parent Material Kind: Alluvium
Parent Material Origin: Mixed

Surface Texture:

1. Very gravelly loam
2. Very cobbly loam
3. Very stony loam 4. Very stony sandy loam 5. Gravelly loam 6. Very gravelly sandy loam 7. Loam 8. Gravelly fine sandy loam 9. Extremely cobbly sandy clay loam 10. Sandy loam 11. Gravelly sandy loam 12. Cobbly loam 13. Extremely cobbly loam 14. Loamy sand 15. Stony sandy loam 16. Very cobbly sandy loam

Surface Texture Modifier:

1. Gravel
2. Stone
3. Cobble

Subsurface Texture Group: Loamy

Surface Fragments <=3" (% Cover): 35 to 60

Surface Fragments >3" (% Cover): >60

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

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

	Minimum	**Maximum**
Drainage Class:	Well	Well
Permeability Class:	Very slow	Moderately rapid
Depth (inches):	15	>72
Electrical Conductivity (mmhos/cm):	0.00	4.00
Sodium Absorption Ratio:	0.00	5.00
Soil Reaction (1:1 Water):	6.6	9.0
Soil Reaction (0.1M CaCl2):	N/A	N/A
Available Water Capacity (inches):	3	9
Calcium Carbonate Equivalent (percent):	N/A	N/A

PLANT COMMUNITIES

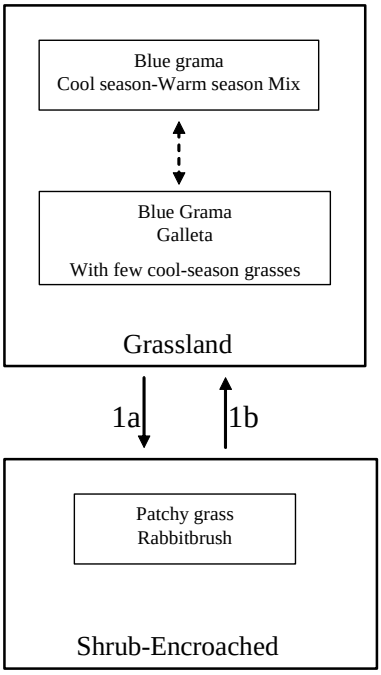
Ecological Dynamics of the Site:

Overview

This site occurs as gravelly stream or fan terraces or as low rolling gravelly hills and ridges dissected by natural drainages. It often occurs adjacent to Loamy sites or is interspersed with inclusions of loamy soils. The historic plant community of the Gravelly site is grass dominated and supports a mixture of warm and cool-season grasses, widely spaced shrubs/trees and a minor component of forbs. Blue grama is the dominant grass species. Winterfat, yucca, broom snakeweed, and rabbitbrush, are woody species typical of the site. The increase of rabbitbrush in response to fire, overgrazing, and decreased resource competition are factors that may facilitate the transition to the Shrub-Encroached state.

Plant Communities and Transitional Pathways (diagram)

MLRA 36, WP-2 Gravelly



1a. Fire, overgrazing,, decreased resource competition .
1b. Brush control, prescribed grazing.

No Plant Community Photos Available at This Time.

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: The historic plant community supports a mixture of warm and cool-season grasses, including blue grama, black grama, little bluestem, New Mexico feathergrass, western wheatgrass, bottlebrush squirreltail, Indian ricegrass, sideoats grama, and spike muhly. Although shrubs are a minor component, there is a wide variety of species adapted to this site. Some of the more common species include, winterfat, soapweed yucca, Apache plume, fourwing saltbush, rabbitbrush, Bigelow sagebrush, and broom snakeweed. Scattered piñon and juniper may also occur. Heavy continuous use by livestock typically results in a decrease of many cool-season grasses, the more palatable warm season grasses, winterfat, and fourwing saltbush. A community dominated by blue grama with galleta occurring as the sub-dominant may result.

Diagnosis: Grass cover is fairly uniform with few large bare areas present. Shrubs and trees constitute a minor component of the site. Evidence of erosion such as pedestalling of grasses, rills and gullies are infrequent.

Canopy Cover:	
Trees	
Shrubs and half shrubs	5 %
Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	22
Bare ground	20
Surface cobble and stone	40
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	315	563	810
Forb	11	19	27
Tree/Shrub/Vine	28	50	72
Lichen			
Moss			
Microbiotic Crusts			
Total	350	625	900

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	188 – 219	188 – 219
2	BOCU	Sideoats Grama	6 – 31	6 – 31
3	BOHI2	Hairy Grama	6 – 19	6 – 19
4	SCSC	Little Bluestem	31 – 63	31 – 63
5	LYPH MUWR	Wolftail Spike Muhly	31 – 63	31 – 63
6	HENE5 HECO26	New Mexico Feathergrass Needleandthread	31 – 63	31 – 63
7	PASM	Western Wheatgrass	31 – 63	31 – 63
8	ELEL5 ACHY	Bottlebrush Squirreltail Indian Ricegrass	31 – 63	31 – 63
9	SPCR PLJA	Sand Dropseed Galleta	6 – 31	6 – 31
10	MUTO2 ARIST	Ring Muhly Threeawn spp.	6 – 31	6 – 31
11	BOER4	Black Grama	31 – 94	31 - 94

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
12	2FP	Other Perennials	6 – 31	6 – 31
13	2FA	Other Annuals	6 – 13	6 - 13

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
14	KRLA	Winterfat	6 – 31	6 – 31
15	YUGL	Small Soapweed	6 – 19	6 – 19
16	PIED JUNIP	Pinyon Pine Juniper spp.	0 – 19	0 – 19
17	FAPA LYPA ATCA2 GUSA2	Apacheplume Pale Wolfberry Fourwing Saltbush Broom Snakeweed	6 – 19	6 – 19
18	TECA2 ERNAN5 ARBI3 ARFR4	Spineless Horsebrush Rubber Rabbitbrush Bigelow Sagebrush Fringed Sagewort	6 – 19	6 – 19
19	2SD	Other Shrubs	6 – 19	6 - 19

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 **0305NM**

Growth Curve Name: **HCPC**

Growth Curve Description: **Mixed warm/cool-season grassland w/ shrub & 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

Additional States:

Shrub-Encroached*:* This state is characterized by the noticeable increase of rabbitbrush, and decreased cover and production of grasses. Grass cover consists mainly of patchy blue grama, ring muhly, galleta, threeawns and dropseeds.

Diagnosis: Rabbitbrush is found at increased densities relative to the Grassland State. Grass cover is patchy with large bare areas present. Blue grama is typically the dominant grass. Evidence of erosion such as pedestalling of plants, rills and gullies may be common.

Transition to Shrub Encroached State (1a) Rabbitbrush is a fire adapted species and may increase or quickly occupy burned areas.[4] Seed production and seedling survival of rabbitbrush is believed to be sensitive to resource competition.[2] During years of limited rainfall high grass cover may help to suppress shrub seedlings by competing directly for soil moisture. Overgrazing can reduce grass cover and provide competition free areas for the establishment of rabbitbrush seedlings.

Key indicators of approach to transition:

- Decrease or change in composition or distribution of grass cover.
- Increase in size and frequency of bare patches.
- Increase in amount of rabbitbrush seedlings.

Transition back to Grassland (2b) Brush control is necessary to initiate the transition back to the Grassland state. Chemical control has been shown to be effective in the control of rabbitbrush.[1,3] Due to its ability to vigorously resprout following disturbance, mechanical brush control methods are generally ineffective unless the plants are severed below the root crown. Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover.

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

Habitat for Wildlife:

This site provides habitat which supports a resident animal community that is characterized by mule deer, bobcat, black-tailed jackrabbit, white-throated woodrat, Merriam's kangaroo rat, Botta's pocket gopher, brush mouse, sparrow hawk, Cassin's kingbird, meadowlark, common raven, chipping sparrow, leopard lizard, plateau whiptail, short-horned lizard, and black-tailed rattlesnake.

Where cliffs and ledges are found associated with the site, golden eagle, great horned owl, prairie falcon, Say's phoebe, white-throated swift, and cliff swallow nest or hunt over the site. Mourning dove and black-chinned sparrow nest on the site. Large rocks or boulders, where found associated with the site, provide habitat for rock squirrels. Where it occurs adjacent to ponderosa pine forests, elk may range in to feed.

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
Alegros	C
Amenson	D
Aridic Ustochrepts	B
Eldado	B
Gatlin	B
Gustspring	B
Guy	B
Ildefonso	B
Lapdum	B
Losmarios	C
Majada	B
Mulligan	B
Millett	B
Pena	B
Salas	C
Sedillo	B
Tesajo	B
Typic Ustorthents	B

Recreational Uses:

This site offers fair to good potential for hiking, horseback riding, nature observation, photography, camping and picnicking. It frequently provides good to excellent pronghorn antelope hunting.

Wood Products:

This site has little significant value for wood products.

Other Products:

Grazing:

This site is suitable for grazing by most kinds and classes of livestock in all seasons of the year, but is poorly suited to continuous yearlong use if potential natural vegetation is to be maintained. Under such use, cool-season grasses, such as New Mexico feathergrass, needleandthread, western wheatgrass, bottlebrush squirreltail, and Indian ricegrass, frequently decline or even disappear. Prolonged heavy use will also cause the decline of such grasses as sideoats grama, spike muhly, and little bluestem, and the site may become characterized by a high density of low-vigor, sod-like blue grama that may make up to 90 percent of the species composition. Advanced deterioration is characterized by increases in ring muhly, threeawn spp., and rabbitbrush. Production in such instances may be cut to one-third or even one-fourth of the potential.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	3.4 – 4.7
75 – 51	4.5 – 6.9
50 – 26	6.7 – 11.0
25 – 0	11.0+

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
Little Bluestem	Schizachyrium scoparium	EP	D	D	D	P	P	P	P	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
Sideoats Grama	Bouteloua curtipendula	EP	P	P	P	P	P	P	P	P	P	P	P	P
New Mexico Feathergrass	Hesperostipa neomexicana	EP	D	D	P	P	P	D	D	D	D	D	D	D
Needleandthread	Hesperostipa comata	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
Bottlebrush Squirreltail	Elymus elymoides	EP	U	U	D	D	D	U	U	U	D	D	D	U
Winterfat	Krascheninnikovia lanata	EP	D	D	P	P	P	P	P	P	D	D	D	D
Indian Ricegrass	Achnatherum hymenoides	EP	P	P	P	P	P	P	P	P	P	P	P	P
Fourwing Saltbush	Atriplex canescens	EP	P	P	P	P	P	D	D	D	D	D	D	P
Black Grama	Bouteloua eriopoda	EP	P	P	P	D	D	D	D	D	D	D	P	P

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
Winterfat	Krascheninnikovia lanata	EP	P	P	P	P	P	P	P	P	P	P	P	P
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
Bottlebrush Squirreltail	Elymus elymoides	EP	U	U	D	D	D	U	U	U	U	U	U	U
Bigelow Sagebrush	Artemisia bigelovii	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
Fourwing Saltbush	Atriplex canescens	EP	P	P	P	P	P	D	D	D	D	D	D	P
Most perennial 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

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
Winterfat	Krascheninnikovia lanata	EP	D	D	D	D	D	D	D	D	D	D	D	D
Western Wheatgrass	Pascopyrum smithii	EP	U	U	D	D	D	U	U	U	U	U	U	U
Indian Ricegrass	Achnatherum hymenoides	EP	U	U	P	P	P	U	U	U	D	D	D	U
Bottlebrush Squirreltail	Elymus elymoides	EP	U	U	P	P	P	U	U	U	D	D	D	U
Bigelow Sagebrush	Artemisia bigelovii	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
Fourwing Saltbush	Atriplex canescens	EP	D	D	D	D	D	D	D	D	D	D	D	D
Most perennial 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, Socorro**

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, Socorro, Catorn and Sandoval Counties.

1. Cluff, G.J., B.A. Roundy, R.A. Evans, and J.A. Young. 1983. Herbicidal control of greasewood (Sarcobatus vermiculatus) and salt rabbitbrush (Chrysothamnus nauseosus ssp. consimilis). Weed Science. 31: 275-279.

2. McKell, C. M., and W. W. Chilcote. 1957. Response of Rabbitbrush following removal of competing vegetation. Journal of Range Management. 10: 228-230

3. Whisenant, S.G. 1988. Control of threadleaf rubber rabbitbrush with herbicides. Journal of Range Management. 41: 470-472

4. Young, R. P. 1983. Fire as a vegetation management tool in rangelands of the Intermountain Region. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/[2004].

Characteristic Soils Are:	
Majada	Mulligan
Pena	
Other Soils included are:	
Alegros, Amenson, Aridic Ustochrepts, Eldado	Gatlin, Gustspring, Gustspring Rocky, Guy
Ildefonso, Lapdum, Losmarios, Millett, Salas	Sedillo, Tesajo, Typic Ustorthents

Site Description Approval:

Author	**Date**	**Approval**	**Date**
Don Sylvester	02/05/80	Durwood E. Ball	03/27/80

Site Description Revision:	**Date**	**Approval**	**Date**
David Trujillo	12/16/04	George Chavez	03/02/05