

**UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
ECOLOGICAL SITE DESCRIPTION**

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R042XD003NM

Site Name: Draw

Precipitation or Climate Zone: 12-14 inches

Phase: _____

PHYSIOGRAPHIC FEATURES

Narrative:

This site occurs as occasionally overflowed drainageways or draws which receive runoff from adjoining sites, and remote higher elevations. Slopes range from 1 to 5 percent. Elevations range from 4700 to 6000 feet.

Land Form:

1. Inset fan on fan piedmont

2.

3.

Aspect:

1. No influence on this site.

2.

3.

	Minimum	Maximum
Elevation (feet)	4700	6000
Slope (percent)	1	5
Water Table Depth (inches)		
Flooding:	Minimum	Maximum
Frequency	Rare	Occasional
Duration	Very brief	Very brief
Ponding:	Minimum	Maximum
Depth (inches)	None	None
Frequency	None	None
Duration		

Runoff Class:

Medium

CLIMATIC FEATURES

Narrative:

Average precipitation for this site is approximately 12 to 14 inches. Variations of 5 inches are not uncommon. Approximately 75 percent of this occurs from May through October with most of the rainfall occurring from July to September. Most of the summer precipitation comes in the form of high intensity short duration thunderstorms. Although little precipitation does occur during the winter month, rain and snow of low intensity usually characterize the precipitation that does occur. Temperatures are mild. Freezing temperatures are common at night from December through April, however, temperatures during the day are frequently above 50 degrees F. Occasionally in December to February brief periods of 0 degree F. Temperatures may be expected. During June to August some days may exceed 100 degrees F.

The mean annual precipitation figures are derived from rain gauge data collected by the BLM (1971 to 1990), and NOAA weather maps utilizing prism model estimation techniques. There are no permanent weather stations within the boundaries of the Land Resource Unit.

	Minimum	Maximum
Frost-free period (days):	140	180
Freeze-free period (days):	145	185
Mean annual precipitation (inches):	12	14

Monthly moisture (inches) and temperature (⁰F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				

Climate Stations:

Station ID _____	Location _____	From: _____	To: _____	Period
Station ID _____	Location _____	From: _____	To: _____	Period
Station ID _____	Location _____	From: _____	To: _____	Period
Station ID _____	Location _____	From: _____	To: _____	Period

INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from 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 of this site are very deep, well drained and may occasionally flood. The surface texture is loam. The textures of the underlying layers can be loam, silt loam, sandy clay loam, silty clay loam or clay loam, and may be modified by gravel or cobbles. Permeability is moderately slow and available water holding capacity to a depth of 40 inches is very low to low.

Parent Material Kind: Alluvium

Parent Material Origin: Limestone

Surface Texture:

1. Loam
2.
3.

Surface Texture Modifier:

1.
2.

Subsurface Texture Group: Loamy

Surface Fragments <=3" (% Cover): 0

Surface Fragments >3" (% Cover): 0

Subsurface Fragments <=3" (%Volume): 30

Subsurface Fragments >=3" (%Volume): 0-5

	Minimum	Maximum
Drainage Class:	Well drained	Well drained
Permeability Class:	Moderately slow	Moderately slow
Depth (inches):	60	>60
Electrical Conductivity (mmhos/cm):	0	2
Sodium Absorption Ratio:		
Soil Reaction (1:1 Water):	7.9	8.4
Soil Reaction (0.1M CaCl2):	N/A	N/A
Available Water Capacity (inches):	2	3
Calcium Carbonate Equivalent (percent):	0	40

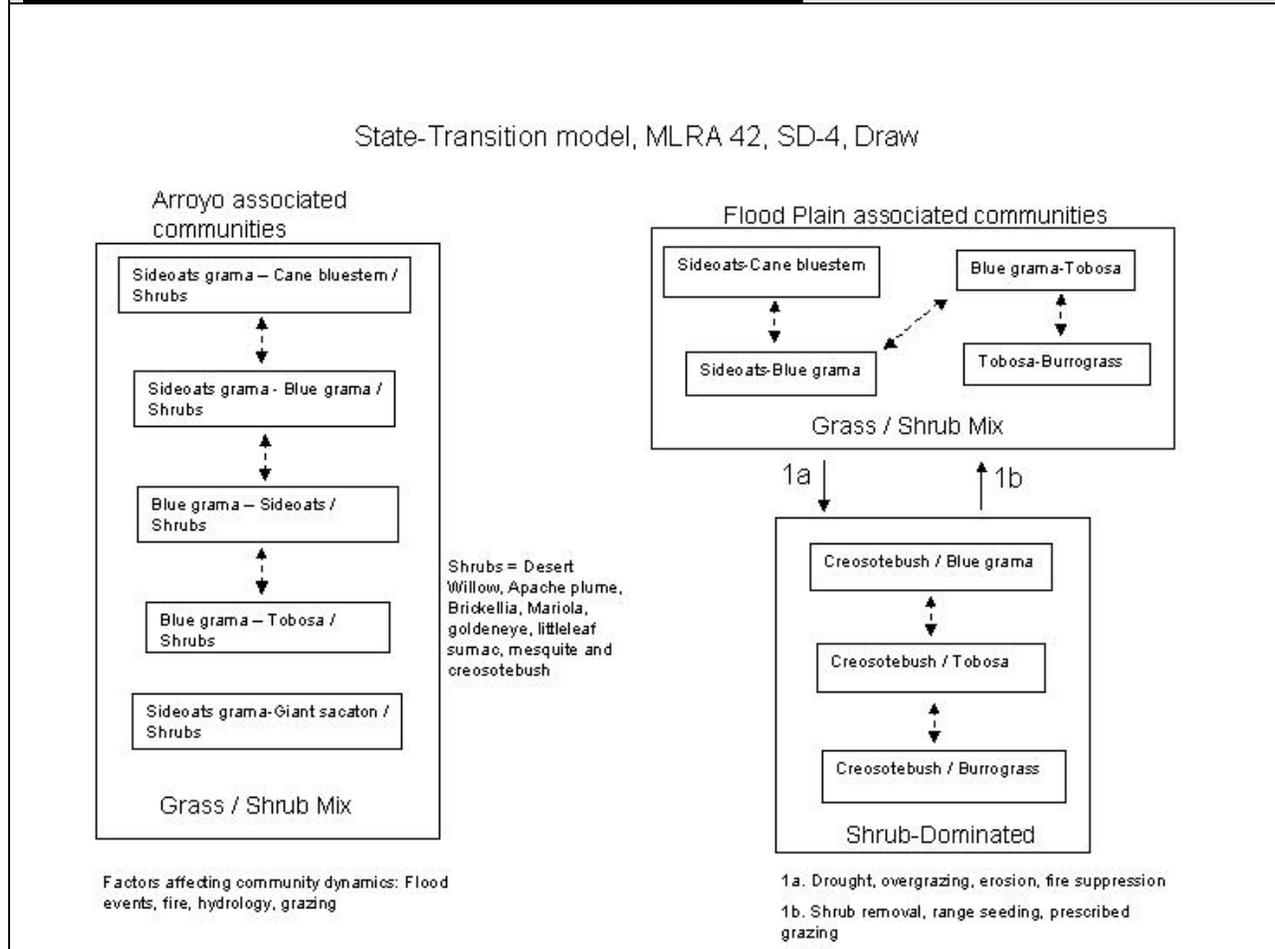
PLANT COMMUNITIES

Ecological Dynamics of the Site:

Overview

This site is associated with Limestone Hills, Igneous Hills, and Gravelly sites from which it receives and transports runoff water. This ecological site consists of two separate elements, the arroyo channel and its associated flood plain. The Draw site is an ephemeral stream floodplain with a gently sloping surface, broad enough that the channel covers only a part of the surface. Along the channel it has the appearance of an elongated sinuous savannah with shrubs and trees dominant in aspect, however, grasses have the greatest annual production. There are an abundant variety of forbs that can occur in the understory. Vegetation is variable and is dependent on flood events, distance away from the channel, parent material, and amount of gravel and cobble in the soil profile. Sideoats grama is the dominant grass in the historic plant community. Cane bluestem, bush muhly, blue grama, and plains bristlegrass can also occur in significant numbers. Desert willow, Apache plume, brickellbush, littleleaf sumac, mariola, and mesquite are common woody species. Retrogression is characterized by a decrease in mid grasses such as sideoats grama, cane bluestem, Arizona cottontop, green sprangletop and an increase in blue grama and tobosa. Transition to the creosotebush-dominated state may occur as a result of continued loss of grass cover, erosion and lack of fire.

Plant Communities and Transitional Pathways (diagram)



MLRA 42; SD-4; Draw

Arroyo Community



Arroyo Community



- Sideoats grama / Desert willow – Brickellbush with creosotebush further out from arroyo
- Cover moderate
- Oryx loam, Fort Bliss Soil Survey, Otero Co.

Arroyo Community



Arroyo Community



- Brickellbush community at left
- Apache plume – Mesquite at right
- Oryx loam, Fort Bliss Soil Survey, Otero Co.

Floodplain Community



Floodplain Community



- Littleleaf sumac – Apache plume at channel border, with mariola and creosotebush farther away from channel
- Grass cover low, bare patches evident, physical soil crusts
- Oryx loam, Fort Bliss Soil Survey, Otero Co.

Shrub Dominated



- Creosotebush / Blue grama community
- Creosotebush dominant shrub
- Grass cover low, plant mortality due to drought, large bare patches,
- Oryx loam, Fort Bliss Soil Survey, Otero Co.

States Containing Historic Climax Plant Community

Arroyo Associated Communities: Shrubs and trees are dominant in aspect along the edges of the stream channel; however, grasses have the greatest annual production. Sideoats grama is the dominant grass species. Cane bluestem, plains bristlegrass, blue grama, bush muhly, vine mesquite, giant sacaton, and alkali sacaton are present in significant amounts. Other grasses including green sprangletop, Arizona cottontop, dropseeds, tobosa and threeawns also occur, but in more limited amounts. Shrub species along the arroyo channel include Apache plume, brickellbush, littleleaf sumac, mesquite, creosotebush, mariola and goldeneye. Desert willow is the dominant tree species. Vegetation dynamics along the arroyo are affected by changes in hydrology, flood events, grazing and fire. If the hydrology is altered by a redirection of flow or a change in channel gradient due to down cutting or deposition, vegetation communities adjust to increased or decreased available water. Higher densities of the more mesic adapted grasses such as sideoats grama, cane bluestem, green sprangletop, vine mesquite, and Arizona cottontop occur in areas that receive increased available water. Flood events can alter vegetation communities by bringing in or dispersing seed from upstream. Apache plume spreads by root suckers following flood events and subsequent burial by sediment.¹ Desert willow withstands flooding and may invade sediment deposited in stream channels. Grasses such as sideoats grama, green sprangletop, Arizona cottontop, cane bluestem, and vine mesquite decrease with grazing induced retrogression. Blue grama, tobosa, alkali sacaton, and threeawns normally increase under heavy grazing pressure. In the past, fire may have played a part in suppressing and shaping the woody component on this site. Species such as desert willow, littleleaf sumac, Apache plume, goldeneye, and mariola, readily sprout following fire. Other species such as creosotebush display limited ability to sprout after top kill and are poorly adapted to fire.¹

Diagnosis: Shrubs and trees are dominant in aspect, however, grasses have the greatest annual production. Sideoats grama is the dominant grass species. Desert willow and shrub species such as Apache plume, brickellbush, mariola, goldeneye, littleleaf sumac, mesquite, and creosotebush may be present in and along the edge of arroyo channel. Litter movement and accumulation is common on this site. The amount of movement and size class of litter is a function of the amount of runoff received from a storm event and plant cover. Typically litter movement is restricted to small (1cm.) to medium (2.5cm.) size class, and (<1m.) to (3m.) distances.

Flood Plain Associated Communities: The floodplain is that portion of the site adjacent to the ephemeral stream channel formed by recurring flooding and alluvial deposition. Sideoats grama and cane bluestem are the dominant grass species. Blue grama also occurs in significant amounts. Apache plume and mariola are the dominant shrubs. Shrubs normally occur in decreasing densities moving away from the channel across the floodplain. Sideoats grama, cane bluestem, plains bristlegrass, green sprangletop and Arizona cottontop decrease under heavy grazing pressure, or from a decrease in available soil moisture, while blue grama, tobosa, and burrograss increase. The amount of rock fragments and/or carbonates in the soil profile, and moderate to low available water capacity contribute to the susceptibility of this site becoming dominated by creosotebush.

Diagnosis: Sideoats grama and cane bluestem are the dominant grass species. Grass cover is high and fairly uniform. Shrubs are mostly confined to the channel border. Runoff is low. Litter

movement occurs mainly by water but is restricted by plant cover, usually caught and concentrated around grasses and shrubs. Size class of litter moved is small (1cm.), and distance moved is typically (<1m).

Ground Cover and Structure: presently being revised.

Plant Community Annual Production (by plant type):

Plant Type	Annual Production (lbs/ac)		
	Low	RV	High
Grass/Grasslike	750	1350	1800
Forb	100	90	120
Tree/Shrub/Vine	80/270	90/270	120/260
Lichen			
Moss			
Microbiotic Crusts			

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	BOCU	Sideoats grama	360-450	540-630
1	BOBA3	Cane bluestem	180-270	
2	BOGR2	Blue grama	120-210	200-270
2	MUPO2	Bush muhly	90-150	
2	PAOB	Vine mesquite	75-100	
3	PLMU3	Tobosa	75-100	180-216
3	SPAI	Alkali sacaton	75-100	
3	SPWR2	Giant Sacaton	100-120	
4	SEVU2	Plains bristlegrass	120-150	150-180
4	DICA8	Arizona cottontop	50-75	
4	LEDU	Green sprangletop	30-50	
4	SPCO4	Spike dropseed	30-50	
4	SPCR	Sand dropseed	30-50	
5	ARIST	Threeawn spp.	36-54	36-54
5	SCBR2	Burrograss	36-54	

Plant Type - Forb

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
6	HEAN3	Sunflower	18-36	18-36
6	2FA	Annual forbs	18-36	
7	2FP	Perennial forbs	36-54	36-54
7	CROTO	Croton spp.	18-36	
7	SPHAE	Globemallow	18-36	

Plant Type – Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
8	BRICK	Brickellbush	75-120	144-180
8	FAPA	Apache plume	100-150	
8	RHMI3	Littleleaf sumac	50-75	
9	LATR	Cresotebush	36-90	36-90
9	PAIN2	Mariola	36-90	
9	PRGL2	Honey mesquite	36-90	
9	VIGUI	Goldeneye spp.	12-24	
10	CHLI2	Desert willow	75-90	75-90

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 5803

Growth Curve Name: HPCP Arroyo Community State

Growth Curve Description: SD-4 Grassland Shrub - Sideoats grama/Willow - Average rainfall year.

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	3	3	8	7	18	28	25	6	2	0

Additional States:

Shrub Dominated State This state is characterized by the dominance of creosotebush. The dominant grasses in this state consist of blue grama, tobosa, or burrograss. Retrogression within this state usually follows the trend of a decrease in the amount of blue grama and an associated increase in tobosa and burrograss. Burrograss may eventually become the dominant grass species. Dropseeds, threeawns, muhly species, fluffgrass and broom snakeweed may also increase in representation.

Diagnosis: Creosotebush cover is high, exceeding that of grasses. Grass cover is patchy with increased amounts of bare ground. Blue grama, tobosa, or burrograss may be the dominant grass. Erosion is evident by water flow patterns and the formation of rills. Resources are redistributed around remaining shrubs and grasses.

Transition to Shrub Dominated (1a): The reduction in grass cover either due to drought or overgrazing can initiate this transition. The reduction in grass cover decreases soil organic matter, reduces aggregate soil stability and negatively impacts soil structure. Creosotebush is poorly suited to fire due to its limited sprouting ability. If historically infrequent fire limited the invasion of creosotebush in desert grasslands, then fire suppression may also impact the ability of creosotebush to dominate this site.¹ Opportunity to utilize fire as a management tool can be lost if herbaceous cover drops below amounts required to supply adequate fine fuels to carry fire.

Key indicators of approach to transition:

- Reduction in grass cover and increase in size and frequency of bare patches.
- Increased soil surface physical crusts—indicating decreased infiltration, decreased soil aggregate stability and loss of organic matter²
- Increased signs of erosion (rills & gullies)
- Increase in creosotebush cover

Transition back to Grass/Shrub mix (1b) Brush management is necessary to remove resource competition from shrubs and increase grass cover. Range seeding may be necessary if less than 15 percent of desired grass species remain. Reestablishing cover will also provide organic matter, increase aggregate stability, and reduce erosion potential. Prescribed grazing will help ensure proper forage utilization and plant vigor, especially during times of drought. The degree of erosion and loss of soil resources may dictate whether or not the system is capable of recovery.

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

The Draw ecological sites exhibit high structural and vegetation diversity and provide thermal, nesting and hiding cover for many wildlife species. The site provides important high protein forage and browse and serves as corridors and conduits for water and wildlife movement. The draw sites are characterized by a diversity of species. A few of the species utilizing this site are mule deer, coyote, bobcat, fox, roadrunner, great-horned owl, northern mockingbird, gambel's quail and Texas horned lizard.

Hydrology Functions:

This site normally receives approximately 12-14 inches annual precipitation. Most summer rainfall occurs as brief sometimes-heavy thunderstorms. Soils are very deep and rated as being in hydrologic group B. Slopes range from 1- 5 percent. Permeability is moderately slow. Runoff is medium, and the hazard of water erosion is moderate. Available water capacity to a depth of 40 inches is very low to low.

Recreational Uses:

This site offers recreation potential for hiking, horseback riding, camping, outdoor classrooms, nature observation, photography and hunting.

Wood Products:

This site has no significant value for wood products

Other Products:

Grazing: The plant community on this site is well suited to grazing by both domestic livestock of all kinds and by wildlife at all seasons of the year. It is well suited to winter and early spring grazing, due to high protein levels in the forage. This site will respond well to a grazing system that rotates the season of use. When grazing sheep or goats and during calving season, predator control should be considered.

Initial starting stocking rates will be determined with the landowner or decision-maker. They will be based on past use histories and type and condition of the vegetation. Calculations used to determine and initial starting stocking rate will also be based on forage preference ratings.

Other Information:

Plant Preference by Animal Kind:

Animal Kind: Cattle

Animal Type: _____

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	D	D	P	P	P	P	P	P	P	D	D	D	D
Cane bluestem	Bothriochloa barbinodis	EP	U	U	P	P	P	D	D	D	U	U	U	U	U
Blue grama	Bouteloua gracilis	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Bush muhly	Muhlenbergia porteri	EP	P	P	P	P	P	D	D	D	D	D	D	D	P
Vine mesquite	Panicum obtusum	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Tobosa	Pleuraphis mutica	EP	U	U	D	D	D	D	D	D	U	U	U	U	U
Alkali sacaton	Sporobolus airoides	EP	U	U	D	D	D	D	D	D	U	U	U	U	U
Giant Sacaton	Sporobolus wrightii	EP	U	U	D	D	D	D	D	D	U	U	U	U	U
Plains bristlegrass	Setaria vulpiseta	EP	U	U	D	D	D	P	P	P	U	U	U	U	U
Arizona cottontop	Digitaria californica	EP	P	P	P	D	D	P	P	P	D	D	D	D	P
Green sprangletop	Leptochloa dubia	EP	D	D	P	P	P	P	P	P	P	P	P	P	D
Spike dropseed	Sporobolus contractus	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
Sand dropseed	Sporobolus cryptandrus	EP	D	D	P	P	P	D	D	D	D	D	D	D	D
Threeawn spp.	Aristida	EP	U	U	D	D	D	U	U	U	U	U	U	U	U
Burrograss	Scleropogon brevifolius	EP	U	U	U	U	U	U	U	U	U	U	U	U	U
Sunflower	Helianthus annuus	EP	U	U	U	U	U	U	U	U	U	U	U	U	U
Annual forbs		EP	D	D	D	D	D	P	P	P	P	P	P	P	D
Perennial forbs		EP	D	D	P	P	P	P	P	P	D	D	D	D	D
Croton spp.	Croton	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Globemallow	Sphaeralcea	EP	D	D	D	D	D	D	D	D	D	D	D	D	D
Brickellbush	Brickellia	S,L	U	U	U	U	U	U	U	U	U	U	U	U	U
Apache plume	Fallugia paradoxa	S,L	D	D	U	U	U	U	U	U	D	D	D	D	D
Littleleaf sumac	Rhus microphylla	S,L	U	U	D	D	D	U	U	U	U	U	U	U	U
Cresotebush	Larrea tridentata	S,L	U	U	U	U	U	U	U	U	U	U	U	U	U
Mariola	Parthenium incanum	S,L	U	U	U	U	U	U	U	U	U	U	U	U	U
Honey mesquite	Prosopis glandulosa	L,F/S	U	U	U	U	U	P	P	P	P	P	P	P	U
Goldeneye spp.	Viguiera	S,L	U	U	U	U	U	U	U	U	U	U	U	U	U
Desert willow	Chilopsis linearis	L, S	U	U	U	U	U	U	U	U	U	U	U	U	U

SUPPORTING INFORMATION

Associated sites:

Site Name	Site ID	Site Narrative
Gravelly Limestone Hills Igneous Hills	042XD007NM 042XE001NM 042XE002NM	This site is associated with Gravelly, Limestone Hills, and Igneous Hills sites from which it receives and transports runoff water.

Similar sites:

Site Name	Site ID	Site Narrative

Inventory Data References (narrative):

Supporting information includes limited clipping data, soil survey investigations, aerial photographs, and personal observations.

Inventory Data References:

Data Source	# of Records	Sample Period	State	County
NM-Range-26	5	1998-2000	NM	Otero

State Correlation:

This site has been correlated with the following sites: _____

Type Locality:

State: New Mexico

County: Otero

Latitude: _____

Longitude: _____

Township: 21 S.

Range: 12 E.

Section: 26

Is the type locality sensitive? Yes No

General Legal Description: Otero County, New Mexico; approximately 23.6 miles east and 4.3 miles north of Oro Grande; SW 1/4, SE 1/4 section 26, T. 21S., R. 12E.; USGS El Paso Draw, NM topographic quadrangle.

Relationship to Other Established Classifications:

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Fort Bliss and Otero County.

Characteristic taxonomic units are:

Fort Bliss SSA:

67-Oryx loam 1 to 5 percent slopes

68-Oryx-Reyab complex (Oryx part)

Other soils included are:

Other References:

1. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, September). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/> [accessed 9/23/02].

2. 9. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheet. Rangeland Soil Quality—Physical and Biological Soil Crusts. Rangeland Sheet 7, [Online]. Available: <http://www.statlab.iastate.edu/survey/SQI/range.html>

Site Description Approval:

<u>{PRIVATE}Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
David Trujillo & Dr. Brandon Bestelmeyer	9/10/00	George Chavez	2/20/03

Site Description Revision:

<u>{PRIVATE}Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
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