

## United States Department of Agriculture Natural Resources Conservation Service

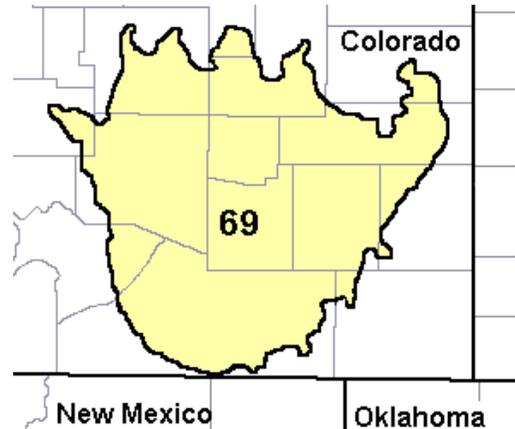
### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Gravel Breaks

**Site ID:** R069XY064CO

**Major Land Resource Area:** 69 – Upper Arkansas Valley Rolling Plains



### Physiographic Features

This site occurs on gently sloping to moderately steep hills.

**Landform:** fan remnants, hill, ridge, terrace

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	3600	6000
<b>Slope (percent):</b>	2	30
<b>Water Table Depth (inches):</b>	60	60
<b>Flooding:</b>		
<b>Frequency:</b>	none	none
<b>Duration:</b>	none	none
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	0
<b>Frequency:</b>	none	none
<b>Duration:</b>	none	none
<b>Runoff Class:</b>	low	very high

### Climatic Features

The mean average annual precipitation varies from 10 to 14 inches per year depending on location and ranges from 5 inches to over 24 inches per year. Approximately 75 percent of the annual precipitation occurs during the growing season from mid-April to late-September. Snowfall can vary greatly from year to year and can range from 20 to 40 inches per year. Winds are estimated to average about 6 to 7 miles per hour annually. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 60 miles per hour.

The average length of the growing season is 155 days, but varies from 147 to 162 days. The average date of first frost in the fall is October 10, and the last frost in the spring is about May 5. July is the hottest month and January is the coldest. It is not uncommon for the temperature to exceed 100 degrees F during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -35 degrees F.

Growth of native cool season plants begins about April 15 and continues to about June 1. Native warm season plants begin growth about May 1 and continue to about August 15. Regrowth of cool season plants occurs in September and October of most years, depending on moisture.

	<u>Minimum</u>	<u>Maximum</u>
<b>Frost-free period (days):</b>	147	162
<b>Freeze-free period (days):</b>	169	186
<b>Mean Annual Precipitation (inches):</b>	10	14

**Average Monthly Precipitation (inches) and Temperature (°F):**

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.27	12.1	46.4
February	0.14	0.36	15.3	52.9
March	0.25	0.68	20.7	61.5
April	0.73	1.16	28.9	71.8
May	0.90	2.21	38.6	81.1
June	0.83	1.79	47.6	91.4
July	2.34	2.38	53.4	96.2
August	1.62	2.00	51.7	93.7
September	1.04	1.12	43.3	86.0
October	0.90	0.78	32.2	74.2
November	0.49	0.51	21.0	58.1
December	0.43	0.27	14.1	48.6

<b>Climate Stations</b>		<b>Period</b>	
<b>Station ID</b>	<b>Location or Name</b>	<b>From</b>	<b>To</b>
CO6763	Pueblo Army Depot	1971	2000
CO3828	Haswell	1922	2001
CO7287	Rush	1924	2001
CO4834	Las Animas	1930	2001

For detailed information visit the Western Regional Climate Center at <http://www.wrcc.dri.edu/> website.

**Influencing Water Features**

<b>Wetland Description:</b>	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
None	None	None	None	None

**Stream Type:** None

**Representative Soil Features**

The soils of this site are very deep and are somewhat excessively drained to excessively drained. These soils have rapid to moderately rapid permeability. They formed in gravelly alluvium and occur on fan remnants, terraces, hills, and ridges often bordering major drainage systems. The available water capacity is typically low, but ranges to moderate in less sandy soils. The surface layer ranges from 2 to 10 inches thick and is typically loam, sandy loam, or loamy sand and has modifiers ranging from gravelly to very gravelly. The pH generally ranges from slightly acid to moderately alkaline. The soil moisture regime is ustic aridic but ranges to aridic in the driest areas of MLRA 69. The soil temperature regime is mesic.

Exposed areas of gravel are inherent to this site. The amount of bare ground varies with the amount of surface gravel. Where slopes are gentle, water flow paths should be broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers and exhibit slight to no evidence of rills, wind scoured areas or pedestaled plants.

As slopes become steep, bare areas may increase. Expect to find evidence of water flow patterns and pedestaled plants. Sub-surface soil layers, where not affected by gravel, are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include: Cascajo, Chicosa, Karval, and Schamber.

Soil series that will be correlated to other MLRA's when outdated soil surveys are updated are: Potter and Nihill. Both soils occur in aridic ustic moisture regime. Potter soils have a thermic temperature regime.

Other soil series that have been correlated to this site include: Nihill, Potter

**Parent Material Kind:** gravelly alluvium  
**Parent Material Origin:** mixed sedimentary  
**Surface Texture:** sandy loam, loamy sand, loam  
**Surface Texture Modifier:** none to very gravelly

**Subsurface Texture Group:** loamy sand, sand  
**Surface Fragments  $\leq$  3" (% Cover):** 0 to 60 percent  
**Surface Fragments  $>$  3" (%Cover):** 0 to 35 percent  
**Subsurface Fragments  $\leq$  3" (% Volume):** 35 to 70 percent  
**Subsurface Fragments  $>$  3" (% Volume):** 5 to 35 percent  
The percent gravel generally increases with depth and averages more than 35 percent.

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	excessively	somewhat excessively
<b>Permeability Class:</b>	rapid	moderately rapid
<b>Depth (inches):</b>	60	60
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	4
<b>Sodium Absorption Ratio*:</b>	0	0
<b>Soil Reaction (1:1 Water)*:</b>	6.1	8.4
<b>Soil Reaction (0.1M CaCl<sub>2</sub>)*:</b>	5.6	8.4
<b>Available Water Capacity (inches)*:</b>	0.8	2.2
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	40

\*These attributes represent 0-40 inches in depth or to the first restrictive layer.

## Plant Communities

### Ecological Dynamics of the Site:

Continuous grazing that does not allow for adequate recovery opportunities between grazing events causes this site to deteriorate. Grasses such as little bluestem, sideoats grama, prairie sandreed, switchgrass and big bluestem decrease in both frequency and production. If proper recovery periods between grazing events are not allowed during the growing season, blue grama will dominate the site and eventually develop into a patchy sodbound condition. Mid and tall grasses will eventually be removed from the plant community. Cushion plants such as mat loco and sessile nailwort in addition to red threeawn, wormwood, fringed sagebrush, small soapweed and cheatgrass will increase or invade the site. In time, continuous use in combination with high stock densities or long term non-use (rest) and lack of fire will result in large amounts of bare ground.

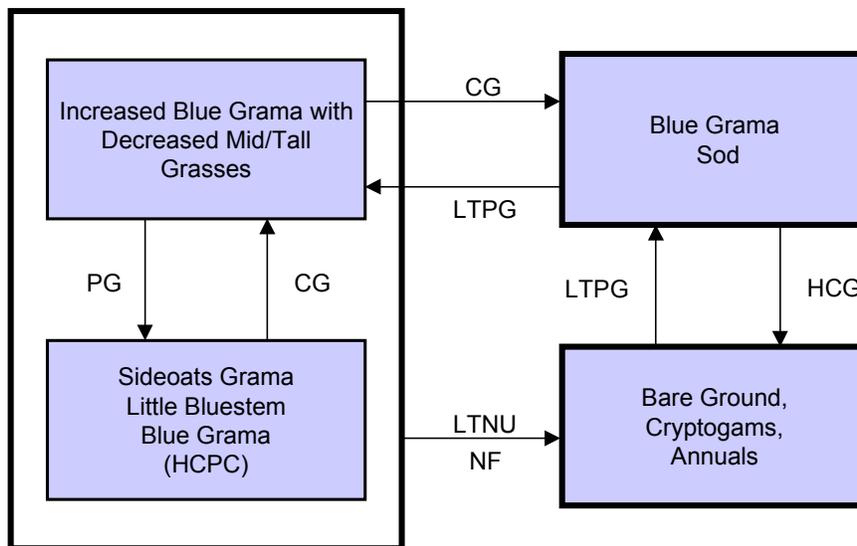
*Tillage is not recommended on this site due to steep shallow soils and associated low production potential.*

Drier and warmer climatic conditions exist in the central portion of MLRA-69. This area includes the eastern half of Pueblo county, northern Otero, extreme northwestern Bent, western edge of Kiowa, southern edge of Lincoln and all of Crowley County. These conditions are primarily caused by a rain shadow effect from the southern Rocky Mountains. Evapotranspiration rates (atmospheric demand) will be higher in this area of MLRA-69. Total annual production will typically be lower.

The historic climax plant community (description follows the plant community diagram) has been determined by study of rangeland relic areas, areas protected from excessive disturbance, seasonal use pastures, short duration/time controlled grazing and historical accounts.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

### Plant Communities and Transitional Pathways



**CG** - continuous grazing without adequate recovery opportunity, **HCG** - heavy continuous grazing, **HCPC** - Historic Climax Plant Community, **LTNU** - long term non-use (>40 years), **LTPG** - long-term prescribed grazing (>40 years), **NF** - no fire, **PG** - prescribed grazing with adequate recovery opportunity

Plant Community Composition and Group Annual Production

			Sideoats Grama, Little Bluestem, Blue Grama (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>			1	563 - 638	75 - 85
sideoats grama	Bouteloua curtipendula	BOCU	1	225 - 263	30 - 35
little bluestem	Schizachyrium scoparium	SCSC	1	75 - 150	10 - 20
blue grama	Bouteloua gracilis	BOGR2	1	38 - 113	5 - 15
galleta	Pleuraphis jamesii	PLJA	1	15 - 38	2 - 5
big bluestem	Andropogon gerardii	ANGE	1	8 - 38	1 - 5
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	8 - 38	1 - 5
prairie sandreed	Calamovilfa longifolia	CALO	1	8 - 38	1 - 5
hairy grama	Bouteloua hirsuta	BOHI2	1	8 - 23	1 - 3
switchgrass	Panicum virgatum	PAVI2	1	8 - 23	1 - 3
western wheatgrass	Pascopyrum smithii	PASM	1	8 - 23	1 - 3
New Mexico featherglass	Hesperostipa neomexicana	HENE5	1	0 - 23	0 - 3
Indian ricegrass	Achnatherum hymenoides	ACHY	1	8 - 15	1 - 2
sand dropseed	Sporobolus cryptandrus	SPCR	1	8 - 15	1 - 2
Indiangrass	Sorghastrum nutans	SONU2	1	0 - 15	0 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 8	0 - 1
buffalograss	Buchloe dactyloides	BUDA	1	0 - 8	0 - 1
hairy tridens	Erioneuron pilosum	ERPI5	1	0 - 8	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 8	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 8	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	8 - 23	1 - 3
threadleaf sedge	Carex filifolia	CAFI	1	8 - 15	1 - 2
other perennial grasses		2GP	1	8 - 23	1 - 3
<b>FORBS</b>			2	75 - 113	10 - 15
dotted gayfeather	Liatris punctata	LIPU	2	8 - 15	1 - 2
purple prairie clover	Dalea purpurea	DAPU5	2	8 - 15	1 - 2
Colorado greenthread	Thelesperma filifolium	THFI	2	0 - 8	0 - 1
cushion buckwheat	Eriogonum ovalifolium	EROV	2	0 - 8	0 - 1
hairy goldaster	Heterotheca villosa	HEVI4	2	0 - 8	0 - 1
heath aster	Symphotrichum ericoides	SYER	2	0 - 8	0 - 1
Hood's phlox	Phlox hoodii	PHHO	2	0 - 8	0 - 1
ironplant goldenweed	Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida	MAPIP4	2	0 - 8	0 - 1
mat loco	Astragalus kentrophyta	ASKE	2	0 - 8	0 - 1
Nuttall's involulus	Evolvulus nuttallianus	EVNU	2	0 - 8	0 - 1
penstemon	Penstemon spp.	PENST	2	0 - 8	0 - 1
rush skeletonplant	Lygodesmia juncea	LYJU	2	0 - 8	0 - 1
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	0 - 8	0 - 1
sessile nailwort	Paronychia sessiliflora	PASE	2	0 - 8	0 - 1
silky crazyweed	Oxytropis sericea	OXSE	2	0 - 8	0 - 1
sulfur-flowered buckwheat	Eriogonum umbellatum	ERUM	2	0 - 8	0 - 1
threadleaf groundsel	Senecio flaccidus var. flaccidus	SEFLF	2	0 - 8	0 - 1
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	2	0 - 8	0 - 1
upright prairie coneflower	Ratibida columnifera	RACO3	2	0 - 8	0 - 1
variable senecio	Packera neomexicana var. mutabilis	PANEM	2	0 - 8	0 - 1
woolly locoweed	Astragalus mollissimus	ASMO7	2	0 - 8	0 - 1
wormwood	Artemisia dracunculul	ARDR4	2	0 - 8	0 - 1
other perennial forbs		2FP	2	8 - 23	1 - 3
<b>SHRUBS</b>			3	38 - 75	5 - 10
fourwing saltbush	Atriplex canescens	ATCA2	3	8 - 23	1 - 3
skunkbush sumac	Rhus trilobata	RHTR	3	0 - 23	0 - 3
winterfat	Krascheninnikovia lanata	KRLA2	3	8 - 15	1 - 2
Bigelow sage	Artemisia bigelovii	ARBI3	3	0 - 15	0 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 8	0 - 1
fringed sagebrush	Artemisia frigida	ARFR4	3	0 - 8	0 - 1
golden currant	Ribes aureum	RIAU	3	0 - 8	0 - 1
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	0 - 8	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 8	0 - 1
shadscale	Atriplex confertifolia	ATCO	3	0 - 8	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 8	0 - 1
spreading buckwheat	Eriogonum effusum	EREF	3	0 - 8	0 - 1
walking stick cholla	Opuntia imbricata	OPIM	3	0 - 8	0 - 1
other shrubs		2SHRUB	3	8 - 23	1 - 3

Annual Production lbs./acre	LOW	RV	HIGH
<b>GRASSES &amp; GRASS-LIKES</b>	245	600	-1005
<b>FORBS</b>	70	94	-115
<b>SHRUBS</b>	35	56	-80
<b>TOTAL</b>	350	750	-1200

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value.

**Plant Community Narratives**

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

**Sideoats Grama, Little Bluestem, Blue Grama Plant Community**

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This community evolved with grazing by large herbivores and is suited to grazing by domestic livestock. Historically, fires likely occurred infrequently. This plant community can be found on areas that are grazed and where the grazed plants receive adequate recovery periods during the growing season. The potential vegetation is about 75-85% grasses and grass-likes, 10-15% forbs and 5-10% woody plants.

The principal mid grasses are little bluestem and sideoats grama. Secondary grasses include blue grama, galleta, big bluestem, prairie sandreed, switchgrass, needleandthread, hairy grama and western wheatgrass. Threadleaf and sun sedge are common. Dominant forbs are purple prairie clover, dotted gayfeather and upright prairie coneflower. Winterfat, Bigelow sagebrush and skunkbush sumac are some of the major shrubs found on this plant community.

This is a sustainable plant community in terms of soil stability, watershed function and biological integrity. Litter is properly distributed where vegetative cover is continuous. Some litter movement may occur on steeper slopes. Decadence and natural plant mortality is very low. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. This community is resistant to many disturbances except continuous grazing, tillage and/or development into urban or other uses. Areas having lost all vegetation, such as livestock and vehicle trails are subject to high erosion rates and extreme runoff.

Total annual production, during an average year, ranges from 350 to 1200 pounds of air-dry weight and will average 750 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6905

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	22	35	15	10	3	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community toward the *Increased Blue Grama with Decreased Mid and Tall Grass Plant Community*.
- Long-term non-use (rest) and no fire will move this plant community toward the *Bare Ground, Annuals, Cryptogams Plant Community*. This transition may take 40 years or more to achieve.

- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Sideoats Grama, Little Bluestem, Blue Grama Plant Community (HCPC)*.

**Increased Blue Grama with Decreased Mid and Tall Grass Plant Community**

This plant community developed with continuous grazing without adequate recovery periods during the growing season. The dominant grass is blue grama. Little bluestem and sideoats grama are still present as secondary grasses in the community. Big bluestem, Indiangrass, switchgrass, prairie sandreed, needleandthread, western wheatgrass, purple prairie clover and winterfat have been significantly reduced. Hairy grama, sand dropseed, red threeawn as well as Hoods phlox, hairy goldaster, western ragweed and slimflower scurfpea have increased. Woody plants include small soapweed and skunkbush sumac.

Plant frequency and vigor have decreased. Reduction of tall, mid and rhizomatous grasses, nitrogen-fixing forbs, shrub component and increased warm season short grass has begun to alter the biotic integrity of this community. Water and nutrient cycles are becoming impaired. Litter levels have been reduced. Flow paths and rills are more apparent. Pedestalled plants are common. Desertification is in an early stage.

Total annual production, during an average year, ranges from 200 to 700 pounds of air-dry weight and will average 400 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6905

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	22	35	15	10	3	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Continuous grazing without adequate recovery opportunities between grazing events will shift this plant community across an ecological threshold toward the *Blue Grama Sod, Threadleaf Sedge Plant Community*. Weedy species are starting to invade and almost all mid grasses are removed.
- Prescribed grazing which allows for adequate recovery periods following each grazing event and proper stocking will move this plant community toward the *Little Bluestem, Sideoats Grama, Plant Community (HCPC)*.
- Long-term non-use (rest) and no fire will shift this plant community toward the *Bare Ground, Annuals, Cryptogams Plant Community*. This transition may take 40 years or more to achieve.

**Blue Grama Sod Plant Community**

This plant community developed with continued grazing without adequate recovery periods between grazing events. Blue grama dominates the community and exhibits a mosaic sodbound appearance. Tall grasses have been removed. Little bluestem and sideoats grama may remain in remnant amounts on steeper slopes. Forbs and shrubs that have increased are wormwood, western ragweed, rush skeletonplant, hairy goldaster, fringed sagebrush, small soapweed and broom snakeweed. Cushion plants such as mat loco, Hood’s phlox and sessile nailwort have increased.

Species diversity and production have been severely reduced. Litter levels are very low. Mineral and water cycles are impaired due to the loss of deeper-rooted grasses, forbs and shrubs. Rills are evident and soil loss is obvious, especially on steeper slopes. Pedestalled plants with exposed roots are common. Desertification is advanced.

Production ranges from 100 to 350 pounds of air-dry vegetation per acre per year and averages 200 pounds.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6907

Growth curve name: Warm season dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	30	40	20	5	0	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Heavy continuous grazing without adequate recovery periods following each grazing event will shift this plant community across an ecological threshold toward the *Bare Ground, Cryptogams, Annuals Plant Community*. Soil erosion is a major concern.
- Long-term prescribed grazing with adequate recovery periods between grazing events will move this plant community toward the *Increased Blue Grama with Decreased Mid and Tall Grass Plant Community* and eventually toward the *HCPC*, assuming an adequate seed source and/or remnant plants are available. This transition may take upwards of 40 years or more to achieve.

### **Bare Ground, Cryptogams, Annuals Plant Community**

This plant community is caused by heavy continuous grazing and/or excessive defoliation without adequate recovery opportunity given during the growing season. Bare ground, cushion plants and cryptogamic crusts have significantly increased. Remnant amounts of blue and/or hairy grama may still be found. Other plants that may be present are Russian thistle, kochia, red threeawn, cheatgrass, cushion plants (mat loco, sessile nailwort, Hoods phlox) and small soapweed.

Soil erosion is severe. Desertification is obvious.

Total annual production can vary from 25 to 150 pounds of air-dry vegetation per acre per year.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number: CO6905

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-69; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	22	35	15	10	3	0	0	0

(monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Long-term prescribed grazing will move this plant community toward the *Blue Grama Sod Plant Community* assuming an adequate seed/vegetative source is available. This transition may take 40 years or more to achieve.

## Ecological Site Interpretations

### Animal Community – Wildlife Interpretations

The variety of soils and vegetation found on this ecological site provides habitat for numerous wildlife species. Historic large grazers that influenced these plant communities were bison, elk, and pronghorn. Changes over time have resulted in the loss of bison, the reduction in elk numbers, and pronghorn population swings. Domestic grazers now share these habitats with wildlife. The grassland communities of eastern Colorado are home to many bird species. Changes in the composition of the plant community when moving from the HCPC to other communities on this ecological site may result in species shifts in the bird community. The occasional wetland found on this ecological site provides essential seasonal water needed for reproductive habitat by some reptiles and amphibians. Because of a lack of permanent water, fish are not commonly expected on this ecological site. Mule and white-tailed deer may use this ecological site. The gray wolf and wild bison used this ecological site in historic times. The wolf is thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

#### **Sideoats Grama, Little Bluestem, Blue Grama Plant Community**

The grasses, forbs, and shrubs in this plant community provide habitat for many reptiles including western rattlesnake, bullsnake, and racer. If water is available for breeding, spadefoot toads and tiger salamanders may be found here. The structural diversity in the plant community on this site provides habitat for Cassin's and Brewer's sparrow and lark bunting. Ferruginous and Swainson's hawks are commonly seen on this site. Small mammals such as white-tailed jackrabbit, badger, swift fox, plains pocket gopher, and several species of mice are common in this plant community. Pronghorn is a typical ungulate found in this community.

#### **Increased Blue Grama with Decreased Mid and Tall Grass Plant Community**

The HCPC species are expected in this plant community, however, the loss of some of the vegetative structural diversity in this plant community makes it less attractive to many HCPC species.

#### **Blue Grama Sod; and Bare Ground, Cryptogams, Annuals Plant Communities**

The loss of shrubs and mid-tall grasses creates habitat for typical shortgrass species such as black-tailed prairie dog, burrowing owl, mountain plover, and horned lark. Black-tailed jackrabbit may replace white-tailed jackrabbit in these communities. Reptiles using these communities are short-horned lizard and lesser earless lizard as well as the HCPC species.

### Animal Preferences (Quarterly – 1,2,3,4<sup>†</sup>)

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses and Grass-like</b>							
big bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
blue grama	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D	D P P D
buffalograss	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D	D D P D
galleta	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N	N N U N
Indian ricegrass	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D	D P D D
Indiangrass	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
little bluestem	U D P U	N D D N	U D P U	N D D N	N D D N	U D P U	U D P U
needleandthread	U P D D	N D N D	U P D D	N D N D	N D N D	U P D D	U P D D
New Mexico feathergrass	N P D U	N D D U	N P D U	N D D U	N D D U	N P D U	N P D U
plains muhly	U U D U	U U D U	U U D U	N N N N	N N N N	U U D U	U U D U
prairie sandreed	U D D U	U D U U	U D D U	U U D U	U U D U	U D D U	U D D U
red threeawn	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
ring muhly	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	N N N N
sand dropseed	U D U N	N U D N	U D U N	N U D N	N U D N	U D U N	U D U N
sideoats grama	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
sixweeks fescue	N D N N	N D N N	N D N N	N D N N	N D N N	N D N N	N D N N
sun sedge	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
switchgrass	U D D U	U D U U	U D D U	N N N N	N N N N	U D D U	U D D U
western wheatgrass	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D	U P D D
<b>Forbs</b>							
dotted gayfeather	U U D U	U D P U	U U D U	U D P U	U D P U	U U D U	U U D U
greenthread	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
hairy goldaster	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	N N N N
heath aster	U U D U	U U P U	U U D U	U U P U	U U P U	U U D U	U U P U
ironplant goldenweed	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
mat loco	U U U U	U D U U	U U U U	U D U U	U D U U	U U U U	U D U U
Nuttall's evolvulus	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U U D U
penstemon	U U U U	U P P U	U U U U	U P P U	U P P U	U U U U	U P P U
purple prairie clover	U P P D	U P P U	U P P D	U P P U	U P P U	U P P D	U P P D
rush skeletonplant	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
scarlet globemallow	U D D U	U P P U	U D D U	U P P U	U P P U	U D D U	U D D U
silky crazyweed	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
threadleaf groundsel	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
twogrooved milkvetch	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
upright prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U U D U
variable senecio	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
western ragweed	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U	U D U U
woolly locoweed	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
wormwood	N N U N	N U U N	N N U N	N U U N	N U U N	N N U N	N N U N
<b>Shrubs</b>							
Bigelow sage	U N U U	D U D U	U N U U	D U D U	D U D U	U N U U	U N U U
broom snakeweed	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
fringed sagebrush	U N N U	U D D U	U N N U	U D D U	U D D U	U N N U	U N N U
golden currant	U D D U	U P P D	U D D U	U P P D	U U U U	U D D U	U P P D
green plume rabbitbrush	N N N D	D D D D	N N N D	D D D D	D D D D	N N N D	N N N D
shadscale	D D P D	D U U D	D D P D	D U U D	D U U D	D D P D	D U U D
skunkbush sumac	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D	D U U D
small soapweed	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D	D P N D
spreading buckwheat	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
winterfat	P P D P	P P P P	P P D P	P P P P	P P P P	P P D P	P P D P

N = not used; U = undesirable; D = desirable; P = preferred; T = toxic

<sup>†</sup> Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

## Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity.

Plant Community	Production (lbs./acre)	Stocking Rate (AUM/acre)
Sideoats Grama, Little Bluestem, Blue Grama (HCPC)	750	0.24
Increased Blue Grama with Decreased Mid/Tall Grass	400	0.13
Blue Grama Sod	200	0.06
Annuals, Cryptogams, Bare Ground	*	*

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangelands in this area provide yearlong forage under prescribed grazing for cattle, sheep, horses and other herbivores. During the dormant period, livestock may need supplementation based on reliable forage analysis.

\*Highly variable; stocking rate needs to be determined on site.

## Hydrology Functions

Water is the principal factor limiting forage production on this site. Soils in hydrologic group A and B dominate this site. Infiltration varies from moderate to high and runoff potential for this site varies from moderate to low depending on soil hydrologic group and ground cover. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

## Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

## Wood Products

No appreciable wood products are present on the site.

## Other Products

This site is a source for gravel and is extensively mined in areas.

## **Supporting Information**

### **Associated Sites**

- (069XY006CO) – Loamy (formerly Loamy Plains)
- (069XY053CO) – Sandstone Breaks
- (069XY046CO) – Shaly Plains
- (069XY047CO) – Alkaline Plains

### **Similar Sites**

- (069XY053CO) – Sandstone Breaks  
[higher production, sandstone outcrop]
- (069XY058CO) – Limestone Breaks  
[highly calcareous soil, lack of gravel]

### **Inventory Data References**

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Ben Berlinger, Rangeland Management Specialist, NRCS; Scott Woodall, Rangeland Management Specialist, NRCS; Lee Neve, Soil Scientist, NRCS; Julie Elliott, Rangeland Management Specialist, NRCS; Terri Skadeland, Biologist, NRCS.

### **State Correlation**

N/A

### **Field Offices**

Canon City, Colorado Springs, Cheyenne Wells, Eads, Holly, Hugo, Lamar, Las Animas, Pueblo, Rocky Ford, Simla, Springfield, Trinidad, Walsenburg

## **Other References**

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpcc.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

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## **Site Description Approval**

/s/

03/25/2004

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State Range Management Specialist

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Date