

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Sandy Salt Flat

**Site ID:** R067BY032CO

**Major Land Resource Area:** 67B – Central High Plains, Southern Part

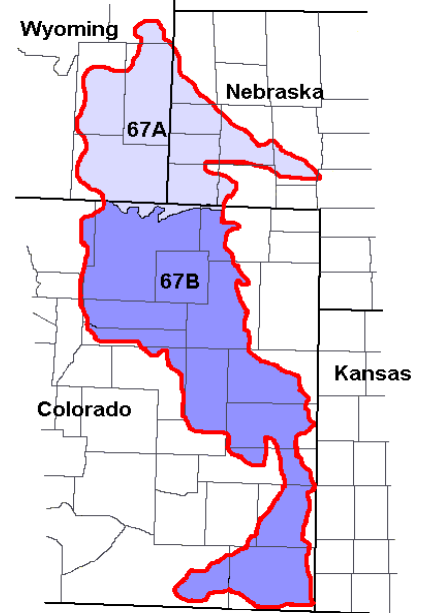
### Physiographic Features

This site occupies broad, flat areas that are slightly depressed from adjacent areas. These areas receive additional runoff from surrounding areas.

**Landform:** fan, drainageway

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	3800	5200
<b>Slope (percent):</b>	0	3
<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	high



### Climatic Features

The mean average annual precipitation varies from 12 to 16 inches per year depending on location and ranges from less than 8 inches to over 20 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 but averages 35 to 45 inches per year. Winds are estimated to average about 9 miles per hour annually, ranging from 10 miles per hour during the spring to 9 miles per hour during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring periods of high winds with gusts to more than 90 miles per hour.

The average length of the growing season is 142 days, but varies from 129 to 154 days. The average date of first frost in the fall is September 28, and the last frost in the spring is about May 9. July is the hottest month and December and January are 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 -35 degrees F or lower.

Site Type: Rangeland  
MLRA: 67B – Central High Plains, Southern Part

Sandy Salt Flat  
R067BY032CO

Growth of native cool season plants begins about March 15 and continues to about June 15. Native warm season plants begin growth about May 15 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>	129	154
<b>Freeze-free period (days):</b>	151	178
<b>Mean Annual Precipitation (inches):</b>	12	16

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.32	0.36	12.0	45.1
February	0.26	0.38	15.9	50.9
March	0.83	0.87	22.3	58.9
April	1.28	1.38	30.1	69.1
May	2.32	2.49	39.9	78.0
June	1.93	2.57	49.0	88.7
July	1.42	2.31	55.0	93.9
August	1.07	2.38	53.5	91.9
September	1.02	1.40	43.8	83.8
October	0.89	1.00	32.5	72.9
November	0.52	0.53	20.9	57.4
December	0.34	0.37	11.9	46.9

<b>Climate Stations</b>		<b>Period</b>	
<b>Station ID</b>	<b>Location or Name</b>	<b>From</b>	<b>To</b>
CO0945	Briggsdale	1948	2000
CO4076	Holly	1918	2000
CO9147	Windsor	1948	1990

For local climate stations that may be more representative, refer to <http://www.wcc.nrcs.usda.gov>.

## Influencing Water Features

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

**Stream Type:** None

## Representative Soil Features

The soils of this site are very deep, well drained, and moderately and slowly permeable. These soils occur on fans and drainageways. The parent material is eolian deposits over clayey alluvium derived mainly from shale. The subsoil has significant salinity and sodicity levels which influence plant species composition and growth. Up to 5 percent gypsum may also be present in the subsoil. Most soils have salts and/or alkali at depths of 10 to 40 inches. The available water capacity is typically low (due to sodium). The pH ranges from slightly to very strongly alkaline. The soil surface layer is typically 0 to 2 inches thick and is loamy sand or sandy loam. The soil moisture regime is ustic aridic. The soil temperature regime is mesic.

The Historic Climax Plant Community (HCPC) should show slight to no evidence of rills. Wind scoured areas with pedestaled plants may occur but should be minor. Water flow paths are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. Slick spots are bare exposed areas that are high in sodium (SAR >13). They are inherent to the site and are intermingled with areas of vegetation. The clayey subsoil restricts water movement.

Major soil series correlated to this ecological site include: Firstview and Keyner

Other soil series that have been correlated to this site include: none

**Parent Material Kind:** alluvium

**Parent Material Origin:** mixed

**Surface Texture:** loamy sand, sandy loam

**Surface Texture Modifier:** none

**Subsurface Texture Group:** clayey

**Surface Fragments  $\leq 3''$  (% Cover):** 0

**Surface Fragments  $> 3''$  (%Cover):** 0

**Subsurface Fragments  $\leq 3''$  (% Volume):** 0-15

**Subsurface Fragments  $> 3''$  (% Volume):** 0

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	well	well
<b>Permeability Class:</b>	slow	moderate
<b>Depth (inches):</b>	80	80
<b>Electrical Conductivity (mmhos/cm)*:</b>	2	32
<b>Sodium Absorption Ratio*:</b>	0	25
<b>Soil Reaction (1:1 Water)*:</b>	7.4	10.0
<b>Available Water Capacity (inches)*:</b>	3	5
<b>Calcium Carbonate Equivalent (percent)*:</b>	1	15

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

## Plant Communities

### Ecological Dynamics of the Site:

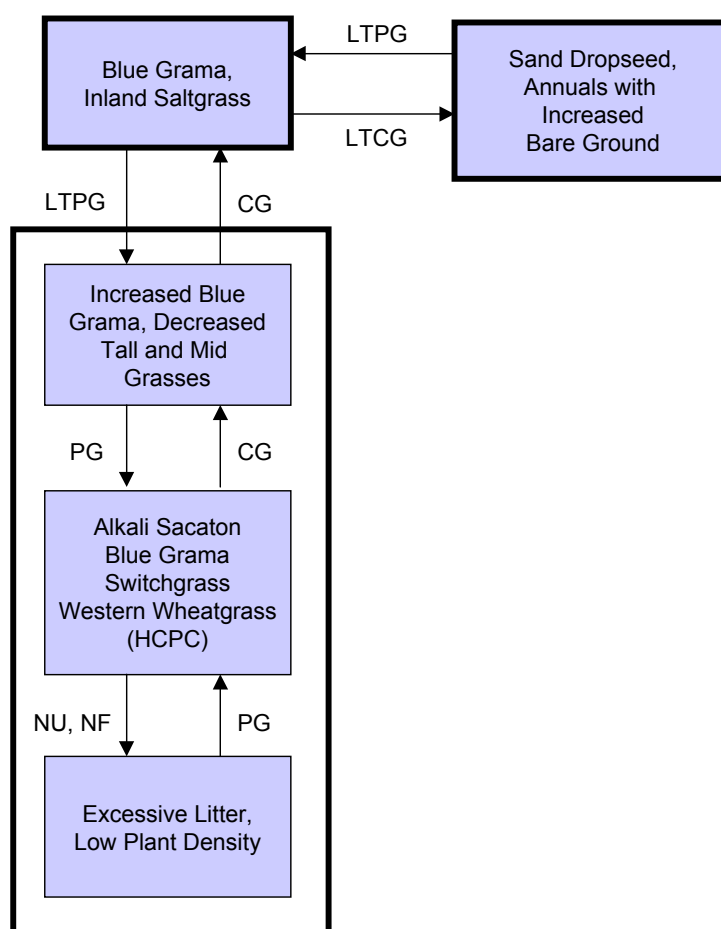
Deterioration of this site, due to continuous grazing without adequate recovery periods following each grazing occurrence, will cause blue grama and inland saltgrass to increase. Alkali sacaton, switchgrass, sand bluestem and western wheatgrass will decrease in frequency and production. Sand dropseed, annuals and bare ground increase under long term continuous grazing. Plant communities subjected to extended periods of non-use (rest) or absence of fire will produce excess litter and ultimately reduce plant density.

Due to severe soil limitations, tillage is not recommended on this site.

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 diagram 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 are discussed in more detail in the plant community descriptions following the diagram.

### Plant Communities and Transitional Pathways



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

## Plant Community Composition and Group Annual Production

			Alkali Sacaton, Blue Grama, Switchgrass, Western Wheatgrass, (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>			<b>1</b>	<b>1190 - 1260</b>	<b>85 - 90</b>
alkali sacaton	Sporobolus airoides	SPAI	1	490 - 560	35 - 40
blue grama	Bouteloua gracilis	BOGR2	1	210 - 280	15 - 20
switchgrass	Panicum virgatum	PAVI2	1	210 - 280	15 - 20
western wheatgrass	Pascopyrum smithii	PASM	1	140 - 280	10 - 20
sand bluestem	Andropogon hallii	ANHA	1	140 - 210	10 - 15
inland saltgrass	Distichlis spicata	DISP	1	14 - 70	1 - 5
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	14 - 70	1 - 5
alkali (Sandberg) bluegrass	Poa secunda	POSE	1	14 - 42	1 - 3
buffalograss	Buchloe dactyloides	BUDA	1	14 - 42	1 - 3
tall dropseed	Sporobolus compositus var. compositus	SPCOC2	1	14 - 42	1 - 3
sand dropseed	Sporobolus cryptandrus	SPCR	1	14 - 28	1 - 2
prairie sandreed	Calamovilfa longifolia	CALO	1	0 - 42	0 - 3
little bluestem	Schizachyrium scoparium	SCSC	1	0 - 28	0 - 2
sideoats grama	Bouteloua curtipendula	BOCU	1	0 - 28	0 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 14	0 - 1
galleta (south)	Pleuraphis jamesii	PLJA	1	0 - 14	0 - 1
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 14	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 14	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 14	0 - 1
slender wheatgrass	Elymus trachycaulus	ELTR7	1	0 - 14	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	14 - 28	1 - 2
other native grasses		2GP	1	14 - 42	1 - 3
<b>FORBS</b>			<b>2</b>	<b>70 - 140</b>	<b>5 - 10</b>
annual buckwheat	Eriogonum annuum	ERAN4	2	0 - 14	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	0 - 14	0 - 1
ironplant goldenweed	Machaeranthera pinnatifida ssp. pinnatifida	MAPIP4	2	0 - 14	0 - 1
lemon scurfpea	Psoralegium lanceolatum	PSLA3	2	0 - 14	0 - 1
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 14	0 - 1
nuttails evolvulus	Evolvulus nuttallianus	EVNU	2	0 - 14	0 - 1
penstemons	Penstemon ssp.	PENST	2	0 - 14	0 - 1
prairie spiderwort	Tradescantia occidentalis	TROC	2	0 - 14	0 - 1
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	0 - 14	0 - 1
slimflower scurfpea	Psoralegium tenuiflorum	PSTE5	2	0 - 14	0 - 1
stickleaf mentzelia	Mentzelia decapetala	MEDE2	2	0 - 14	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 14	0 - 1
woolly locoweed	Astragalus mollissimus	ASMO7	2	0 - 14	0 - 1
other native forbs		2FP	2	14 - 70	1 - 5
<b>SHRUBS</b>			<b>3</b>	<b>70 - 210</b>	<b>5 - 15</b>
fourwing saltbush	Atriplex canescens	ATCA2	3	14 - 42	1 - 3
sand sagebrush	Artemisia filifolia	ARFI2	3	14 - 42	1 - 3
winterfat	Krascheninnikovia lanata	KRLA2	3	14 - 42	1 - 3
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	14 - 28	1 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 14	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 14	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 14	0 - 1
spreading buckwheat	Eriogonum effusum	EREF	3	0 - 14	0 - 1
other native shrubs		2SHRUB	3	14 - 42	1 - 3

Annual Production lbs./acre		LOW	RV*	HIGH
<b>GRASSES &amp; GRASS-LIKES</b>		670	1155	1840
<b>FORBS</b>		65	105	145
<b>SHRUBS</b>		65	140	215
<b>TREES</b>				
<b>TOTAL</b>		800	1400	2200

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 table shown above has 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.

### Alkali Sacaton, Blue Grama, Switchgrass, Western Wheatgrass Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This plant community developed by large grazing transient herbivores, is well suited for domestic livestock grazing and can be found on are that are properly managed with prescribed grazing that allow for adequate recovery periods following each grazing event during the growing season.

This community consists chiefly of tall and mid warm and cool season grasses. The landscape is undulating sand over fine textured alluvium. The potential vegetation is about 85-90% grasses and grass-like plants, 5-10% forbs and 5-15% shrubs by air dry weight. Principal dominant grasses consist of alkali sacaton, sand bluestem, switchgrass, western wheatgrass and blue grama. Secondary grasses and grass-like plants are inland saltgrass, sand dropseed, little bluestem and sun sedge. Forbs and shrubs such as ironplant goldenweed, Louisiana sagewort, dotted gayfeather, sand sagebrush and green plume rabbitbrush are common.

This plant community is diverse, stable and productive and is well adapted to the Northern Great Plains climatic conditions. Litter is properly distributed with very little movement off-site and natural plant mortality is very low. It is well suited to carbon sequestration, water yield, wildlife use by many species, livestock use and is esthetically pleasing. 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.

Production in this community can vary from 800 to 2200 pounds of air-dry vegetation per acre per year depending on the weather and will average 1400 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6709

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	7	25	35	15	10	5	1	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 community toward the *Increased Blue Grama and Decreased Tall and Mid Grasses Plant Community*.

- Non-use (rest) and lack of periodic fire shifts this plant community to the *Excessive Litter, Low Plant Density Plant Community*.
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Alkali Sacaton, Blue Grama, Switchgrass, Western Wheatgrass Plant Community (HCPC)*.

### Increased Blue Grama with Decreased Tall and Mid Grasses Plant Community

This community developed with longer term continuous grazing with inadequate recovery periods. Plant frequency has decreased, but the overall integrity of the vegetation remains intact. Tall warm season grasses such as alkali sacaton, sand bluestem and switchgrass are present but in reduced amounts compared to the HCPC. Blue grama and inland saltgrass have increased. Western wheatgrass is still present and may have increased slightly.

Total aboveground carbon has been reduced due to decreases in forage and litter production. Reduction of deep-rooted tall grasses, forbs and shrub component and increased warm season short grasses has begun to alter the biotic integrity of this community. Water and nutrient cycles may be impaired. Slick spots (bare high sodium areas) may be increasing.

Production in this community can vary from 500 to 1700 pounds of air-dry vegetation per acre per year depending on the weather and will average 1000 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6710

Growth curve name: Warm season dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	20	10	5	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 following each grazing event will shift this plant community across an ecological threshold toward the *Blue Grama, Inland Saltgrass Plant Community*.
- Prescribed grazing with adequate recovery periods between grazing events and proper stocking will move this plant community back to the *Alkali Sacaton, Blue Grama, Switchgrass, Western Wheatgrass Plant Community (HCPC)*. This can be a relatively short-term transition.

### Excessive Litter, Low Plant Density Plant Community

This plant community occurs when grazing is removed for long periods of time (rest) in the absence of fire. Plant composition is similar to the HCPC, however individual species production and frequency will be lower.

Much of the nutrients are tied up in excessive litter. The semiarid environment and the absence of animal traffic to break down litter slow nutrient recycling. Aboveground litter also limits sunlight from reaching plant crowns. Many plants, especially bunchgrasses (alkali sacaton, switchgrass) die off. Thick litter and absence of grazing animals (animal impact) or fire reduce seed germination and establishment.

In advanced stages, plant mortality can increase and erosion may eventually occur if bare ground increases. Once this happens, an ecological threshold has been crossed, and it will require increased energy input in terms of practice cost and management to bring back.

Total annual production ranges from 500 to 1500 pounds of air-dry vegetation per acre per year.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6711

Growth curve name: Warm season dominant, cool season sub-dominant, excess litter; MLRA-67B; upland coarse texture soil.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	35	17	10	5	3	0	0

(monthly percentages of total annual growth)

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

- Prescribed grazing with adequate recovery periods following each grazing event and associated animal impact will move this plant community towards the *Alkali Sacaton*, *Blue Grama*, *Switchgrass*, *Western Wheatgrass Plant Community (HCPC)*. The length of time to move this plant community back will depend on the how degraded the plant community has become.

### Blue Grama, Inland Saltgrass Plant Community

This plant community developed with continuous grazing which did not allow for adequate recovery periods during the growing season. This plant community has crossed an ecological threshold. Blue grama and inland saltgrass are the dominant species. Alkali sacaton, sand bluestem and switchgrass have been removed. Western wheatgrass may still present in remnant amounts where available moisture resides.

Overall plant diversity and biotic integrity have been significantly reduced. The water cycle, nutrient cycle, energy flow dynamics and organic matter levels are much reduced. Slick spots (bare areas between blue grama and saltgrass plants) have increased in size. Wind blown salts and soil can accelerate formation of slick spots. Flow paths may be forming. Desertification is obvious.

Production in this community can vary from 200 to 800 pounds of air-dry vegetation per acre per year depending on the weather and will average 400 pounds.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6710

Growth curve name: Warm season dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	20	10	5	0	0	0

(monthly percentages of total annual growth)

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



- Long term continuous grazing without adequate recovery periods between grazing events moves this plant community across an ecological threshold to the *Sand Dropseed, Annuals with Increased Bare Ground Plant Community*. This transition can take up to 40 or more years.
- Long term prescribed grazing with adequate recovery periods between grazing events will shift this plant community to the *Increased Blue Grama with Decreased Tall and Mid Grass Plant Community* and eventually to the *HCPC* if an adequate seed/vegetative source is present. This is a long-term recovery transition that can take up to 40 years or more to achieve.

### **Sand Dropseed, Annuals with Increased Bare Ground Plant Community**

This plant community developed under long term continuous grazing without adequate recovery periods between grazing events. Inland saltgrass persists in localized areas. Sand dropseed and annual plants such as sixweeks fescue, cheatgrass, Russian thistle, and kochia have increased and/or invaded.

Accelerated soil loss is a major concern. Wind scoured areas may be apparent as regression proceeds. Slick spots have enlarged and are connected by flow paths. Soil stability, plant diversity and productivity are lacking. Nutrient cycle, water cycle, energy flow and community dynamics are severely impacted. Desertification is well advanced.

Production in this community can vary from 50 to 200 pounds of air-dry vegetation per acre per year.

The following is an estimated growth curve of this plant community expected during a normal year. Vegetative growth begins earlier in the southern reaches (Baca, Bent, Kiowa, Las Animas and Prowers counties) of MLRA-67B. Vegetative growth will typically be suppressed during the months of June through August in these counties due to higher evapotranspiration rates.

Growth curve number: CO6710

Growth curve name: Warm season dominant; MLRA-67B; upland coarse textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	20	10	5	0	0	0

(monthly percentages of total annual growth)

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

- Long term prescribed grazing with adequate recovery periods between each grazing event and proper stocking will move this community toward the *Blue Grama, Inland Saltgrass Plant Community* and eventually back to the *Historic Climax Plant Community* or associated successional plant community stages assuming an adequate seed/vegetative source is available. This transition can take a long time to achieve, (40 years or more).

## Ecological Site Interpretations

### Animal Community – Wildlife Interpretations

#### **Alkali Sacaton, Blue Grama, Switchgrass, Western Wheatgrass Plant Community (HCPC)**

The structural diversity in the plant community found on the HCPC is attractive to a number of wildlife species. Common bird species expected on the HCPC include Cassin's and Brewer's sparrow, chestnut collared longspur, lark bunting, western meadowlark, and ferruginous and Swainson's hawks. The combination of mid-tall grasses and shrubs provides habitat for greater and lesser prairie chicken in the eastern reaches of MLRA-67. Scaled quail are expected to use this community.

White-tailed and black-tailed jackrabbit, badger, pronghorn, coyote, swift fox, plains pocket gopher, long-tailed weasel, and several species of mice are mammals that commonly use this plant community. Reptiles using this community include western rattlesnake, bullsnake, plains garter snake, western hognose snake, racer, western box turtle, and six-lined racerunner.

#### **Blue Grama with Decreased Tall and Mid Grasses Plant Community**

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

#### **Blue Grama, Inland Saltgrass and Excessive Litter and Low Plant Density Plant Communities**

The lack of shrubs and taller grasses in these plant communities results in a shift of bird species away from the HCPC birds. Lark bunting, chestnut-collared longspur, western meadowlark, and Cassin's and Brewer's sparrow stop using these communities altogether. With the exception of the hawk species, most HCPC bird species would be only occasional users of these communities on sites with adequate drainage, typical shortgrass prairie species such as horned lark, killdeer, long-billed curlew, McCown's longspur, mountain plover, burrowing owl, black-tailed prairie dog, and ferruginous hawk are dominant species.

Jackrabbit, black-tailed prairie dog, thirteen-lined ground squirrel, and desert cottontail rabbit are frequent users of these communities. All other mammal species from the HCPC may use the community. Reptiles using these communities exclusively are short-horned lizard and lesser earless lizard. Other reptiles using these communities include the species listed for the HCPC.

#### **Sand Dropseed, Annuals with Increased Bare Ground Plant Community**

The presence of tall species such as kochia, Russian thistle, sand dropseed, and others in this community limit use by mountain plover, prairie dogs, and other species requiring unobstructed visual distances. Most HCPC species are not expected here because of the change in vegetative structure.

#### **Other Potential Species**

The plains spadefoot is the only common species of frog or toad inhabiting grasslands in Eastern Colorado. This species requires water for breeding. Tiger salamanders may be found on grassland sites, but require a water body for breeding. Either of these species may be found in any plant community if seasonal water requirements are met. Mule and white-tailed deer may use this ecological site, however the shrub cover is too low to provide escape or hiding cover. On ecological site locations near riparian areas, deer will use the vegetation for feeding. Big brown bats will use any plant community on this ecological site if a building site is in the area. The gray wolf, black-footed ferret, and wild bison used this ecological site in historic times. The wolf and ferret are thought to be extirpated from Eastern Colorado. Bison are currently found only as domestic livestock.

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses and Grass-like</b>							
alkali sacaton	U D D U	N U N N	U D D U	N U N N	N U N N	U D D U	U D D U
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
bottlebrush squirreltail	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
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
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
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
prairie sandreed	U D D U	U D U U	U D D U	U D U U	U D U 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 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
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
slender wheatgrass	U P U U	N D U N	U P U U	N D U N	N D U N	U P U U	U P U U
switchgrass	U D D U	U D U U	U D D U	U D U U	U D U U	U D D U	U D D U
tall dropseed	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 N
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
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
<b>Forbs</b>							
annual buckwheat	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	U U U U
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
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
lemon scurfpea	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	U U U U
Louisiana sagewort	U 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 U U
prairie spiderwort	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
slimflower scurfpea	N N N N	N U U N	N N N N	N U U N	N U U N	N N N N	N N N N
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
<b>Shrubs</b>							
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
fourwing saltbush	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 D P
plains pricklypear	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
sand sagebrush	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U
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 P P	P P P P	P P P P	P P P P	P P P P	P P P P	P P P 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)
Alkali Sacaton, Blue Grama, Switchgrass, Western Wheatgrass (HCPC)	1400	0.45
Increased Blue Grama, Decreased Tall and Mid Grasses	1000	0.32
Blue Grama, Inland Saltgrass	400	0.13
Low Plant Density, Excessive Litter	*	*
Sand Dropseed, Annuals, 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. This site is dominated by soils in hydrologic group A. Infiltration is high and runoff potential for this site varies from moderate to high depending on 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

None noted.

## **Supporting Information**

### **Associated Sites**

- (067BY015CO) – Sands (formerly Deep Sands)
- (067BY022CO) – Choppy Sands

### **Similar Sites**

- (067BY033CO) – Salt Flat  
[lacks sandy surface and tall warm season grasses]

### **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 include: Ben Berlinger, Rangeland Management Specialist, NRCS; Harvey Sprock, Rangeland Management Specialist, NRCS; James Borchert, Soil Scientist, NRCS; Terri Skadeland, Biologist, NRCS.

### **State Correlation**

This site is specific to Colorado.

### **Field Offices**

Akron, Cheyenne Wells, Eads, Hugo

## Other References

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## Site Description Approval

/s/

03/25/2004

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State Range Management Specialist

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Date