

United States Department of Agriculture Natural Resources Conservation Service

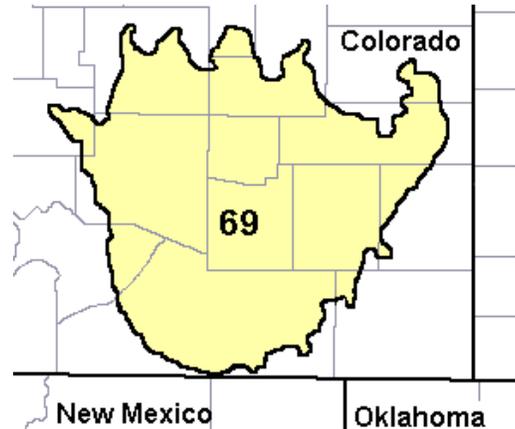
Ecological Site Description

Site Type: Rangeland

Site Name: Sandy Salt Flat

Site ID: R069XY032CO

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



Physiographic Features

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

Landform: fan, drainageway, terrace **Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3600	5000
Slope (percent):	0	3
Water Table Depth (inches):	60	60
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	very low	low

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>
Frost-free period (days):	147	162
Freeze-free period (days):	169	186
Mean Annual Precipitation (inches):	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

Climate Stations		Period	
Station ID	Location or Name	From	To
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

Wetland Description:	<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 well drained. Permeability is moderately slow to slow. These soils formed in alluvium on fans, terraces, and in drainageways. Significant salinity and sodicity levels are present in the subsoil between the depths of 8 to 40 inches, which affects plant growth and plant composition. The available water capacity is typically high, but the effects of salinity restrict availability to plants and water movement through the soil. The soil surface layer ranges from 3 to 8 inches thick and is typically sandy loam, loamy sand, or fine sandy loam. The subsoil ranges from sandy clay loam to clay. The pH ranges from slightly alkaline to moderately alkaline in the surface and strongly alkaline to very strongly alkaline in the subsoil and substratum. The soil moisture regime is typically ustic aridic, but ranges to aridic in the driest areas of MLRA 69. 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: Keyner, Firstview
 Arvada (sandy loam surface) could be correlated to this site when outdated soil surveys are updated.

Soil series that will be correlated to other MLRA's when outdated soil surveys are updated are: none

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

Parent Material Kind: alluvium
Parent Material Origin: mixed sedimentary
Surface Texture: sandy loam, loamy sand, fine sandy loam
Surface Texture Modifier: none

Subsurface Texture Group: sandy
Surface Fragments ≤ 3" (% Cover): 0 to 15 percent
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0 to 15 percent
Subsurface Fragments > 3" (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	well
Permeability Class:	moderately slow	slow
Depth (inches):	60	60
Electrical Conductivity (mmhos/cm)*:	1	8
Sodium Absorption Ratio*:	1	40
Soil Reaction (1:1 Water)*:	7.4	9.4
Soil Reaction (0.1M CaCl₂)*:	7.2	9.0
Available Water Capacity (inches)*:	4.0	7.0
Calcium Carbonate Equivalent (percent)*:	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.

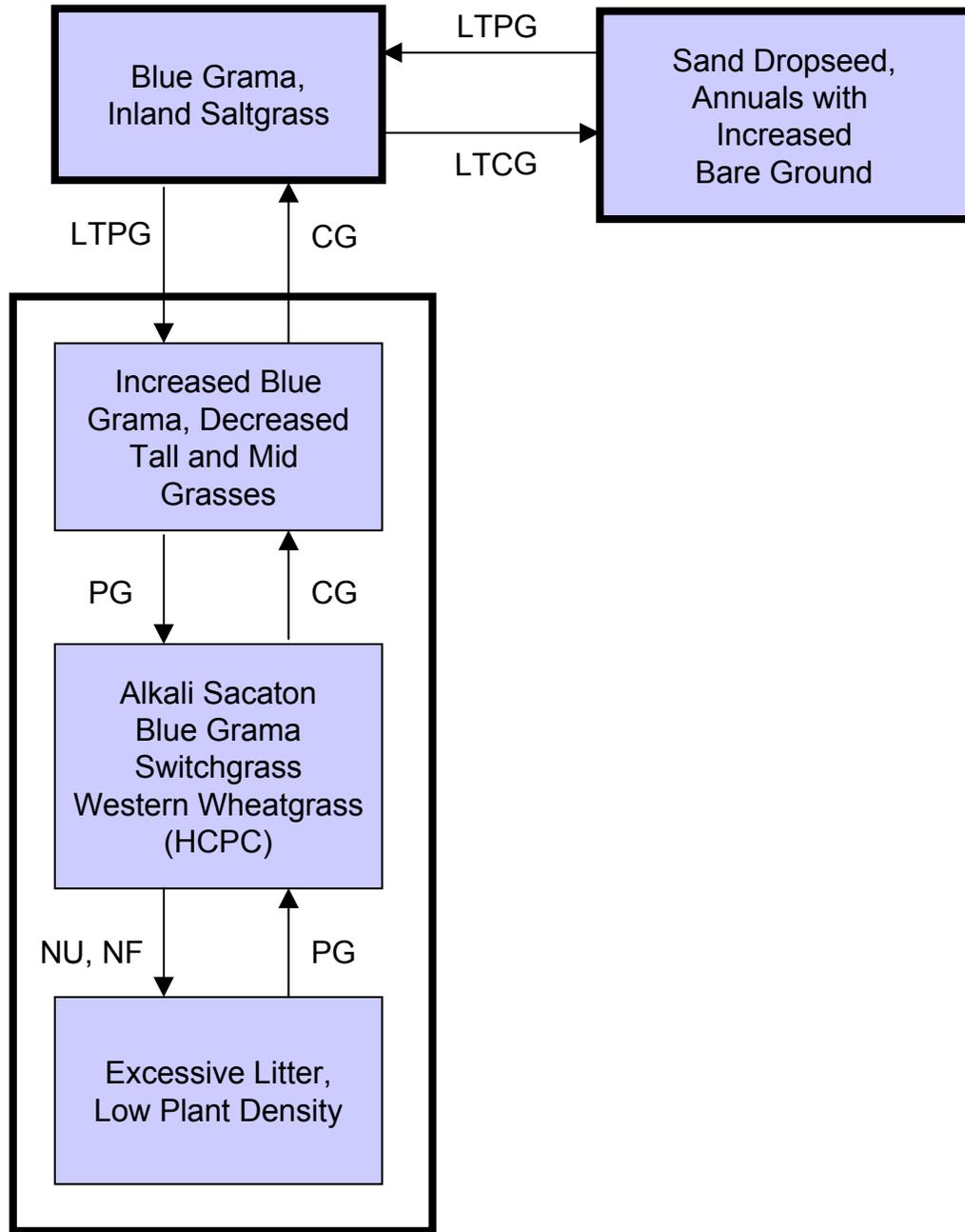
Due to severe soil limitations, tillage is not recommended on this site.

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, **HCPC** - Historic Climax Plant Community, **LTPG** - long term prescribed grazing (>40 years), **NF** - no fire, **NU** - non-use, **PG** - prescribed grazing with adequate recovery periods

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Alkali Sacaton, Blue Grama, Switchgrass, Western Wheatgrass (HCPC)		
			Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	1105 - 1170	85 - 90
alkali sacaton	Sporobolus airoides	SPAI	1	325 - 455	25 - 35
blue grama	Bouteloua gracilis	BOGR2	1	195 - 325	15 - 25
switchgrass	Panicum virgatum	PAV12	1	130 - 260	10 - 20
sand bluestem	Andropogon hallii	ANHA	1	130 - 195	10 - 15
western wheatgrass	Pascopyrum smithii	PASM	1	130 - 195	10 - 15
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	39 - 65	3 - 5
inland saltgrass	Distichlis spicata	DISP	1	13 - 65	1 - 5
alkali bluegrass	Poa juncifolia	POJU	1	13 - 39	1 - 3
galleta	Pleuraphis jamesii	PLJA	1	13 - 39	1 - 3
prairie sandreed	Calamovilfa longifolia	CALO	1	13 - 39	1 - 3
tall dropseed	Sporobolus compositus var. compositus	SPCOC2	1	13 - 39	1 - 3
sand dropseed	Sporobolus cryptandrus	SPCR	1	13 - 26	1 - 2
buffalograss	Buchloe dactyloides	BUDA	1	0 - 26	0 - 2
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 26	0 - 2
little bluestem	Schizachyrium scoparium	SCSC	1	0 - 26	0 - 2
sideoats grama	Bouteloua curtipendula	BOCU	1	0 - 26	0 - 2
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 13	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 13	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 13	0 - 1
sun sedge	Carex inops ssp. heliophila	CAINH2	1	13 - 26	1 - 2
other perennial grasses		2GP	1	13 - 39	1 - 3
FORBS			2	65 - 130	5 - 10
annual buckwheat	Eriogonum annuum	ERAN4	2	0 - 13	0 - 1
dotted gayfeather	Liatis punctata	LIPU	2	13 - 26	1 - 2
silky prairie clover	Dalea villosa	DAVI	2	13 - 26	1 - 2
bush morningglory	Ipomoea leptophylla	IPLE	2	0 - 13	0 - 1
ironplant goldenweed	Machaeranthera pinnatifida ssp. pinnatifida var. pinnatifida	MAPIP4	2	0 - 13	0 - 1
lemon scurfpea	Psoralegium lanceolatum	PSLA3	2	0 - 13	0 - 1
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 13	0 - 1
Nuttall's evolvulus	Evolvulus nuttallianus	EVNU	2	0 - 13	0 - 1
pale evening-primrose	Oenothera albicaulis	OEAL	2	0 - 13	0 - 1
penstemon	Penstemon spp.	PENST	2	0 - 13	0 - 1
prairie spiderwort	Tradescantia occidentalis	TROC	2	0 - 13	0 - 1
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	0 - 13	0 - 1
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	0 - 13	0 - 1
slimflower scurfpea	Psoralegium tenuiflorum	PSTE5	2	0 - 13	0 - 1
tenpetal blazingstar	Mentzelia decapetala	MEDE2	2	0 - 13	0 - 1
Texas croton	Croton texensis	CRTE4	2	0 - 13	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 13	0 - 1
woolly locoweed	Astragalus mollissimus	ASMO7	2	0 - 13	0 - 1
other perennial forbs		2FP	2	13 - 65	1 - 5
SHRUBS			3	65 - 195	5 - 15
fourwing saltbush	Atriplex canescens	ATCA2	3	13 - 39	1 - 3
sand sagebrush	Artemisia filifolia	ARFI2	3	13 - 39	1 - 3
winterfat	Krascheninnikovia lanata	KRLA2	3	13 - 39	1 - 3
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	13 - 26	1 - 2
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 13	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 13	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 13	0 - 1
spreading buckwheat	Eriogonum effusum	EREF	3	0 - 13	0 - 1
other shrubs		2SHRUB	3	13 - 39	1 - 3

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	580	1073	1665
FORBS	60	98	135
SHRUBS	60	130	200
TOTAL	700	1300	2000

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.

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 (HPCP). This plant community developed by large grazing transient herbivores and is well suited for domestic livestock grazing and can be found on areas 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, prairie sandreed, sand dropseed, little bluestem and sun sedge. Forbs and shrubs such as silky prairie clover, prairie spiderwort, purple prairie clover, 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 700 to 2000 pounds of air-dry vegetation per acre per year depending on the weather and will average 1300 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 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 and mid 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 lost 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 400 to 1200 pounds of air-dry vegetation per acre per year depending on the weather and will average 700 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 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 it will require increased energy input in terms of practice cost and management to bring back.

Total annual production ranges from 200 to 1100 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: CO6906

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

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	25	30	15	10	3	2	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 and alkali sacaton may persist in remnant amounts.

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 150 to 600 pounds of air-dry vegetation per acre per year depending on the weather and will average 300 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:

- 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 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 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

The variety of grasses, forbs, and shrubs found on this ecological site in the various plant communities provides habitat for a wide range of 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 dramatic species shifts in the bird community. 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, however the shrub cover is too low to expect more than occasional use. 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.

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, lark bunting, western meadowlark, and ferruginous and Swainson's hawks. The combination of mid-tall grasses and shrubs provides habitat for lesser prairie chicken in the eastern parts of this site. 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, 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 makes 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. 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, mountain plover, and ferruginous hawk are dominant species.

Black-tailed jackrabbit and black-tailed prairie dog may frequent these communities along with mammal species from the HCPC. Reptiles using these communities are short-horned lizard and lesser earless lizard and 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 and other species requiring unobstructed visual distances. Most HCPC species are not expected here because of the change in vegetative structure.

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-likes							
alkali bluegrass	U D U D	D P U D	U D U D	U P N D	U P N D	U D U D	U D U D
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
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
inland saltgrass	N U U N	N N N N	N U U N	N N N N	N N N N	N U U N	N U U N
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 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 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
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
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
Forbs							
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	N U U N
bush morningglory	U D P U	U D D U	U D P U	U D D U	U D D U	U D P U	U D D 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	N U U N
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 D 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
pale evening-primrose	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
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
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	N N N N
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
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 prairie clover	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P 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
tenpetal blazingstar	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
Texas croton	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
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
Shrubs							
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
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
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 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

[†] 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)	1300	0.40
Increased Blue Grama, Decreased Tall and Mid Grasses	700	0.22
Blue Grama, Inland Saltgrass	300	0.09
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

- (069XY019CO) – Sands (formerly Deep Sands)
- (069XY021CO) – Choppy Sands

Similar Sites

- (069XY033CO) – 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 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

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>)

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (<http://nasis.nrcs.usda.gov>)

USDA, NRCS. 2004. The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Andrews, R. and R. Righter. 1992. Colorado Birds. Denver Museum Nat. Hist., Denver, CO. 442 pp.

Armstrong, D.M. 1972. Distribution of mammals in Colorado. Univ. Kansas Museum Nat. Hist. Monograph #3. 415 pp.

Colorado Breeding Bird Atlas. 1998. Hugh Kingery, Ed., Dist. CO Wildlife Heritage Found., P.O. Box 211512, Denver, CO, 80221. 636 pp.

Fitzgerald, J.P., C.A. Meaney, and D.M. Armstrong. 1994. Mammals of Colorado. Denver Museum Nat. Hist. Denver, CO. 467 pp.

Hammerson, G.A. 1986. Amphibians and reptiles in Colorado. CO Div. Wild. Publication Code DOW-M-I-3-86. 131 pp.

Rennicke, J. 1990. Colorado Wildlife. Falcon Press, Helena and Billings, MT and CO Div. Wildlife, Denver CO. 138 pp.

Site Description Approval

/s/

03/25/2004

State Range Management Specialist

Date