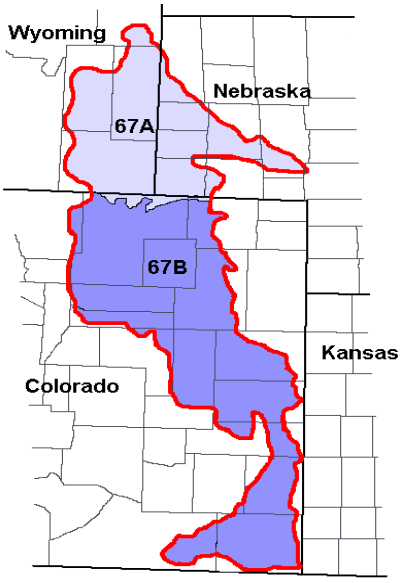
United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description



Site Type: Rangeland

Site Name: Shale Breaks

Site ID: R067BY044CO

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

Physiographic Features

This site occurs on broken lands controlled by shale bedrock. Slopes range from gently rolling to hilly.

Landform: ridge, hill

Aspect: N/A

	Minimum	Maximum
Elevation (feet):	3800	5600
Slope (percent):	5	30
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:	high	very 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.

Growth of native cool season plants begins about March 15 and continues to about June15. 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.

	Minimum	Maximum
Frost-free period (days):	129	154
Freeze-free period (days):	151	178
Mean Annual Precipitation (inches):	12	16

Average Monthly Precipitation (inches) and Temperature (ºF):

	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

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
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

Wetland Description:	**System**	**Subsystem**	**Class**	**Sub-class**
None	None	None	None	None

Stream Type: None

Representative Soil Features

The soils of this site are typically shallow but range to moderately deep, well drained, and moderately to (more typically) very slowly permeable. These soils occur on ridges and hills. Most soils have weathered shale at depths of 6 to 20 inches. The available water capacity is typically very low or low. The soil surface layer is typically 1 to 8 inches thick.

The Historic Climax Plant Community should exhibit areas of exposed shale bedrock and surface shale fragments are inherent to this site. 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. Sub-surface soil layers, where not affected by bedrock, are non-restrictive to water movement and root penetration.

The hazard of water erosion increases as slope increases. Some flow paths, rills and pedestaled plants may be evident.

Major soil series correlated to this ecological site include: Midway, Shingle, Samsil, and Lismas.

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

Parent Material Kind: residuum
Parent Material Origin: shale, clayey
Surface Texture: clay loam, silty clay loam, clay
Surface Texture Modifier: none

Subsurface Texture Group: clayey
Surface Fragments ≤ 3" (% Cover): 0-15
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0-35
Subsurface Fragments > 3" (% Volume): 0

	Minimum	Maximum
Drainage Class:	well	well
Permeability Class:	very slow	moderately slow
Depth (inches):	6	20
Electrical Conductivity (mmhos/cm)*:	0	8
Sodium Absorption Ratio*:	0	15
Soil Reaction (1:1 Water)*:	6.6	9.0
Available Water Capacity (inches)*:	1	4
Calcium Carbonate Equivalent (percent)*:	0	5

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

Plant Communities

Ecological Dynamics of the Site:

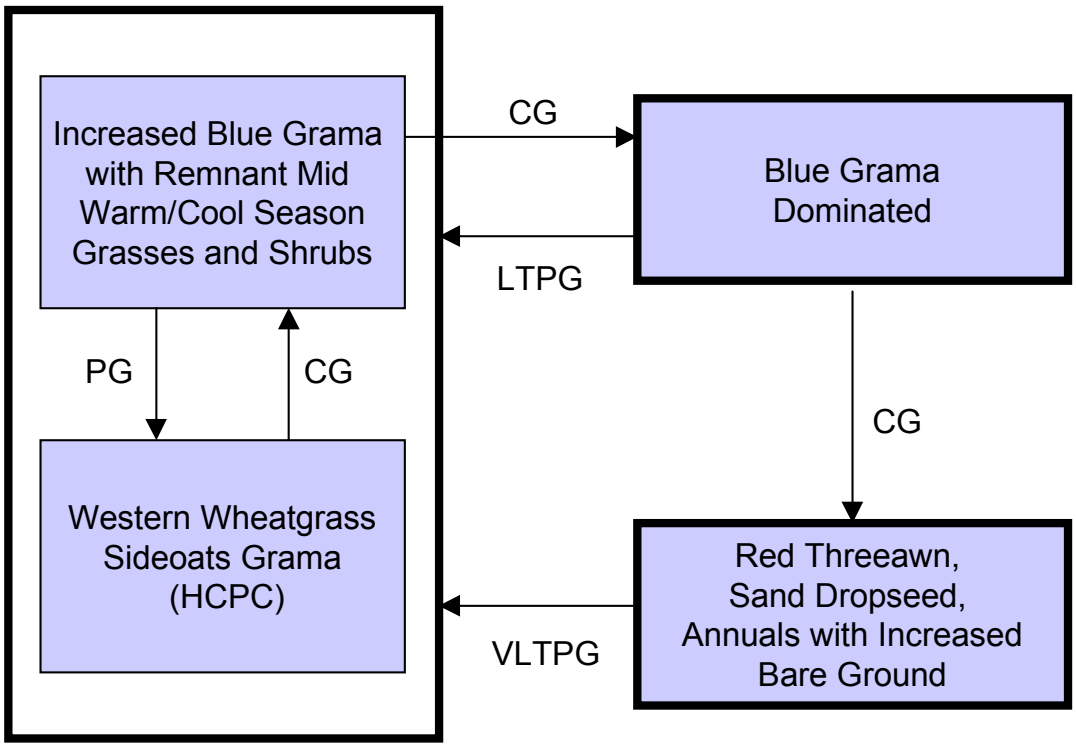
Deterioration of this site, due to continuous grazing without adequate recovery periods following each grazing occurrence, will cause blue grama to increase and if continued long enough, red threeawn, sand dropseed, ring muhly and bare ground will increase. Western wheatgrass, sideoats grama and green needlegrass will decrease in frequency and production as well as key shrubs such as fourwing saltbush and winterfat. American vetch and other highly palatable forbs will decrease also.

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

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 durationl/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), **PG** - prescribed grazing with adequate recovery period, **VLTPG** - very long term prescribed grazing with adequate recovery periods (>80 yrs)

Plant Community Composition and Group Annual Production

			Western Wheatgrass, Sideoats Grama (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1*	*455 - 520*	*70 - 80*
western wheatgrass	Pascopyrum smithii	PASM	1	130 - 195	20 - 30
sideoats grama	Bouteloua curtipendula	BOCU	1	98 - 163	15 - 25
green needlegrass	Nassella viridula	NAVI4	1	33 - 98	5 - 15
blue grama	Bouteloua gracilis	BOGR2	1	33 - 65	5 - 10
little bluestem	Schizachyrium scoparium	SCSC	1	13 - 46	2 - 7
alkali sacaton	Sporobolus airoides	SPAI	1	20 - 46	3 - 7
big bluestem	Andropogon gerardii	ANGE	1	0 - 7	0 - 1
bottlebrush squirreltail	Elymus elymoides ssp. elymoides	ELELE	1	0 - 7	0 - 1
buffalograss	Buchloe dactyloides	BUDA	1	0 - 7	0 - 1
Indian ricegrass	Achnatherum hymenoides	ACHY	1	0 - 7	0 - 1
inland saltgrass	Distichlis spicata	DISP	1	0 - 7	0 - 1
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	0 - 7	0 - 1
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 7	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 7	0 - 1
ring muhly	Muhlenbergia torreyi	MUTO2	1	0 - 7	0 - 1
sand dropseed	Sporobolus cryptandrus	SPCR	1	0 - 7	0 - 1
switchgrass	Panicum virgatum	PAVI2	1	0 - 7	0 - 1
threadleaf sedge	Carex filifolia	CAFI	1	7 - 13	1 - 2
sun sedge	Carex inops ssp. heliophila	CAINH2	1	7 - 20	1 - 3
other native grasses		2GP	1	7 - 20	1 - 3
FORBS			*2*	*65 - 98*	*10 - 15*
purple prairie clover	Dalea purpurea var. purpurea	DAPUP	2	13 - 33	2 - 5
American vetch	Vicia americana	VIAM	2	7 - 20	1 - 3
bigtop dalea	Dalea enneandra	DAEN	2	7 - 13	1 - 2
Fremont goldenweed	Oonopsis foliosa var. foliosa	OOFOF	2	7 - 13	1 - 2
scarlet globemallow	Sphaeralcea coccinea	SPCO	2	7 - 13	1 - 2
desert princesplume	Stanleya pinnata var. pinnata	STPIP	2	0 - 7	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	0 - 7	0 - 1
groundplum milkvetch	Astragalus crassicarpus	ASCR2	2	0 - 7	0 - 1
heath aster	Symphyotrichum ericoides	SYER	2	0 - 7	0 - 1
Louisiana sagewort	Artemisia ludoviciana	ARLU	2	0 - 7	0 - 1
mat loco	Astragalus kentrophyta	ASKE	2	0 - 7	0 - 1
penstemons	Penstemon spp.	PENST	2	0 - 7	0 - 1
povertyweed	Iva axillaris	IVAX	2	0 - 7	0 - 1
sessile nailwort	Paronychia sessiliflora	PASE	2	0 - 7	0 - 1
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	2	0 - 7	0 - 1
sulphur-flower buckwheat	Eriogonum umbellatum	ERUM	2	0 - 7	0 - 1
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	2	0 - 7	0 - 1
upright prairie coneflower	Ratibida columnifera	RACO3	2	0 - 7	0 - 1
other native forbs		2FP	2	13 - 33	2 - 5
SHRUBS			*3*	*65 - 98*	*10 - 15*
fourwing saltbush	Atriplex canescens	ATCA2	3	13 - 46	2 - 7
winterfat	Krascheninnikovia lanata	KRLA2	3	7 - 33	1 - 5
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 7	0 - 1
fringed sagebrush	Artemisia frigida	ARFR4	3	0 - 7	0 - 1
green plume rabbitbrush	Ericameria nauseosa ssp. nauseosa var. glabrata	ERNAG	3	0 - 7	0 - 1
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 7	0 - 1
small soapweed	Yucca glauca	YUGL	3	0 - 7	0 - 1
other native shrubs		2SHRUB	3	7 - 20	1 - 3

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	230 -	488	- 800
FORBS	60 -	81	- 100
SHRUBS	60 -	81	- 100
TOTAL	350 -	650	- 1000

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 or annual production of a normal or representative year.

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.

Western Wheatgrass, Sideoats Grama Plant Community

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

The historic climax plant community consists mainly of mid cool and warm season grasses. The principal dominant mid grasses are western wheatgrass and sideoats grama. Blue grama is the dominant short grass. Little bluestem and green needlegrass are also present. Forbs and shrubs such as purple prairie clover, American vetch, Fremont goldenweed, scarlet globemallow, fourwing saltbush and winterfat are significant. The HCPC is about 70-80% grasses and grass-likes, 10-15% forbs and 10-15% woody plants.

This is a sustainable plant community in terms of watershed function and biological integrity. Litter is properly distributed. 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.

Total annual production, during an average year, ranges from 350 to 1000 pounds per acre air-dry weight and will average 650 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: CO6701
Growth curve name: Cool season/warm season co-dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	28	15	12	10	5	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 grazing events will shift this plant community toward the *Increased Blue Grama with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community.*
- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Western Wheatgrass, Sideoats Grama Plant Community (HCPC).*

Increased Blue Grama with Remnant Mid Warm/Cool Season Grasses and Shrubs Plant Community

This community developed with longer term continuous grazing resulting from the lack of adequate recovery periods between grazing occurrences. Blue grama dominates this plant community. Mid cool and warm season grasses such as western wheatgrass, sideoats grama and green needlegrass have been reduced to remnant amounts. American vetch, purple prairie clover, fourwing saltbush and winterfat are reduced but can still be found.

Plant frequency and vigor have decreased. Reduction of rhizomatous wheatgrass, nitrogen-fixing forbs, shrub component and increased warm season short grasses have begun to alter the biotic integrity of this community. Water and nutrient cycles are becoming impaired. Flow paths and small rills can be found. Some mildly pedestaled plants can be found. This is an early stage of desertification.

Total annual production, during an average year, ranges from 250 to 800 pounds per acre air-dry weight and will average 500 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: CO6702
Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-67B, upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	2	15	45	20	15	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 opportunity between grazing events will shift this plant community across an ecological threshold toward the *Blue Grama Dominated Plant Community.*
- Prescribed grazing with adequate recovery periods following each grazing event and proper stocking will move this plant community toward the *Western Wheatgrass, Sideoats Grama, Plant Community (HCPC).*

Blue Grama Dominated Plant Community

This plant community has developed with further continuous grazing. Blue grama dominates this plant community. Sod bound conditions rarely develop because of shallow soils and rough/broken topography. Western wheatgrass and green needlegrass are absent and have been replaced by increased amounts of red threeawn and sand dropseed. Only a remnant amount of sideoats grama, little bluestem and shrubs occur.

A significant amount of production and diversity has been lost when compared to the HCPC. Loss of cool season grasses, shrub component and nitrogen fixing forbs have negatively impacted energy flow and nutrient cycling. Soil loss is obvious where flow paths are connected. The plant community lacks diversity and exhibits a greatly impaired water cycle. This community is at risk of losing sideoats grama, little bluestem, fourwing saltbush and winterfat. Desertification is obvious.

Total annual production, during an average year, ranges from 100 to 500 pounds per acre air-dry weight and will average 250 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: CO6707
Growth curve name: Warm season dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	20	45	20	10	2	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 opportunity between grazing events will shift this plant community across an ecological threshold toward the *Red Threeawn, Sand Dropseed, Annuals and Bare Ground Plant Community.* This transition can occur in a short time span (10 - 20 years).
- Long term prescribed grazing with adequate recovery periods between grazing events will move this plant community to the *Increased Blue Grama with Remnant Mid Warm\Cool Season Grasses and Shrubs Plant Community* and eventually to the *HCPC* or associated successional plant communities assuming an adequate seed/vegetative source is available. This change will require a long period of time and may be difficult to attain depending on the degree of degradation.

Red Threeawn, Sand Dropseed, Annuals with Increased Bare Ground Plant Community

This plant community develops with further continuous grazing. Remnant amounts of blue grama, fourwing saltbush and winterfat have been replaced by red threeawn, sand dropseed, ring muhly, little barley, plains prickleypear and broom snakeweed. Annual invaders such as kochia, Russian thistle and cheatgrass have increased.

Increased bare ground is a major concern. Erosion potential is high. Soil loss can be severe. This community lacks stability, diversity and productivity. Desertification is well advanced.

Total annual production, during an average year, ranges from 25 to 150 pounds per acre air-dry weight.

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: CO6707
Growth curve name: Warm season dominant; MLRA-67B; upland fine textured soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	20	45	20	10	2	0	0	0

(monthly percentages of total annual growth)

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

- Very long term prescribed grazing with adequate recovery periods between grazing events and proper stocking can eventually move this community back to the *Historic Climax Plant Community* or associated successional plant communities, depending upon the degree of degradation of the plant community and availability of an adequate seed/vegetative source. This transition may take up to 80 years or more to accomplish.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Western Wheatgrass, Sideoats Grama Plant Community
Common bird species expected on the HCPC include Cassin's sparrow, chestnut collared longspur, lark bunting, western meadowlark, and ferruginous and Swainson's hawks. 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 (if water is in home range), western hognose snake, racer, western box turtle, and six-lined racerunner.

Increased Blue Grama with Remnant Warm/Cool Season Grasses and Shrubs Plant Community
The reduction of shrubs and taller grasses in this plant community results in a shift of bird species away from the HCPC birds. Lark bunting, chestnut-collared longspur, and western meadowlark use declines and Cassin's sparrow stop using the community altogether. Habitat conditions are ideal for long-billed curlew. McCown's longspur, burrowing owl, mountain plover, killdeer, and horned lark begin using this community. Ferruginous and Swainson's hawks are frequent users of this community.

Most mammals will be the same as in the HCPC, however jackrabbit, black-tailed prairie dog, desert cottontail, and thirteen-lined ground squirrel use will increase because of the changing plant community. Reptiles using this community are the same as in the HCPC.

Blue Grama Dominated and Red Threeawn, Sand Dropseed, Annuals with Increased Bare Ground Plant Communities
Burrowing owl, mountain plover, horned lark, McCown's longspur, killdeer, and long-billed curlew use these plant communities although mountain plover will avoid areas where slopes are greater than 5 percent. With the exception of the hawk species, no HCPC bird species would be expected in these communities. 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 these communities. 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.

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†)

Common Name	Cattle				Sheep				Horses				Deer				Antelope				Bison				Elk			
Grasses and Grass-likes																												
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
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
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
green needlegrass	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
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 junegrass	U	D	U	D	N	D	N	U	U	D	U	D	N	D	N	U	N	D	N	U	U	D	U	D	U	D	U	D
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
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
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
threadleaf sedge	U	D	U	D	U	P	N	D	U	D	U	D	U	P	N	D	U	P	N	D	U	D	U	D	U	D	U	D
Forbs																												
American vetch	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
bigtop dalea	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	D	P	U
desert princesplume	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
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
Fremont goldenweed	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
groundplum milkvetch	U	D	U	U	U	D	D	U	U	D	U	U	U	D	D	U	U	D	D	U	U	D	U	U	U	D	U	U
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	D	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
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	U	U	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	U	U	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
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
sulphur-flower buckwheat	U	U	D	U	U	U	U	U	U	U	D	U	U	U	U	U	U	U	U	U	U	U	D	U	U	U	D	U
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
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
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
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
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
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
† 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)
Western Wheatgrass, Sideoats Grama (HCPC)	650	0.21
Increased Blue Grama w/ Remnant Warm/Cool Grasses & Shrubs	500	0.16
Blue Grama Dominated	250	0.08
Red Threeawn, Sand Dropseed, Annuals w/Increased 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 due to the shallowness of the soil. This site is dominated by soils in hydrologic group D. Infiltration is low 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

(067BY002CO) – Loamy (formerly Loamy Plains)
(067BY042CO) – Clayey (formerly Clayey Plains)
(067BY036CO) – Overflow
(067BY045CO) – Shaly Plains

Similar Sites

(067BY045CO) – Shaly Plains [gentler slopes, more production]
(067BY063CO) – Gravel Breaks [gravels, not shale; less western wheatgrass]

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 (formerly combined with Shaly Plains).

Field Offices

Akron, Brighton, Burlington, Byers, Cheyenne Wells, Eads, Flagler, Fort Collins, Fort Morgan, Greeley, Holly, Hugo, Kiowa, Lakewood, Lamar, Longmont, Simla, Springfield, Sterling

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (http://hpccsun.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

State Range Management Specialist Date