

United States Department of Agriculture Natural Resources Conservation Service

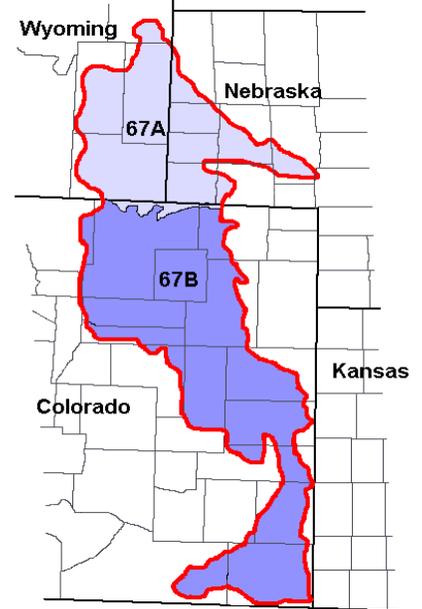
Ecological Site Description

Site Type: Rangeland

Site Name: Sandy Meadow

Site ID: R067BY029CO

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



Physiographic Features

This site occurs on level to gently sloping slopes.

Landform: interdune, stream terrace, flood plain **Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3600	5300
Slope (percent):	0	3
Water Table Depth (inches):	0	36
Flooding:		
Frequency:	rare	occasional
Duration:	brief	brief
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	negligible	negligible

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 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>
Frost-free period (days):	129	154
Freeze-free period (days):	151	178
Mean Annual Precipitation (inches):	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

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

This ecological site has a combination of physical and hydrological features that: 1) provide season-long ground water within 3.5 feet of the surface, 2) allows relatively free movement of water and air in the upper part of the soil, and 3) are rarely, or occasionally flooded.

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
Cowardin, et al., 1979	Palustrine	N/A	Emergent Wetland	Persistent

Representative Soil Features

The soils of this site are very deep, very poorly to somewhat poorly drained, and rapidly permeable. These soils occur on interdunes, stream terrace, and flood plain. Some soils have 0-20% rock fragments in the underlying material. The available water capacity is typically very low to low. The soil surface layer is typically 7 to 20 inches thick.

The Historic Climax Plant Community (HCPC) should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site include: Boel, Els, Loup

Other soil series that have been correlated to this site include: Ipage Var., Dwyer wet*, and Manter wet*

* Dwyer wet and Manter wet are typically found in the uplands and do not have water tables.

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

Subsurface Texture Group: sandy
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0 - 20
Subsurface Fragments > 3" (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	very poorly	somewhat poorly
Permeability Class:	rapid	rapid
Depth (inches):	80	80
Electrical Conductivity (mmhos/cm)*:	0	2
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	6.6	8.4
Available Water Capacity (inches)*:	2.5	4.0
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:

Continuous grazing without adequate recovery periods following each grazing occurrence, will initially cause prairie cordgrass, switchgrass, Indiangrass, sand bluestem, Nebraska sedge and false indigo to decrease in frequency and production. Prairie sandreed, alkali sacaton, inland saltgrass, Baltic rush and western ragweed will gradually increase. Further continuous grazing will produce a plant community comprised of alkali tolerant species, remnant prairie sandreed and Kentucky bluegrass. Excessive litter, decadence and plant mortality can result from the lack of fire or non-use. Extended periods of non-use (rest), lack of fire or heavy long term continuous grazing can lead to increase bare ground.

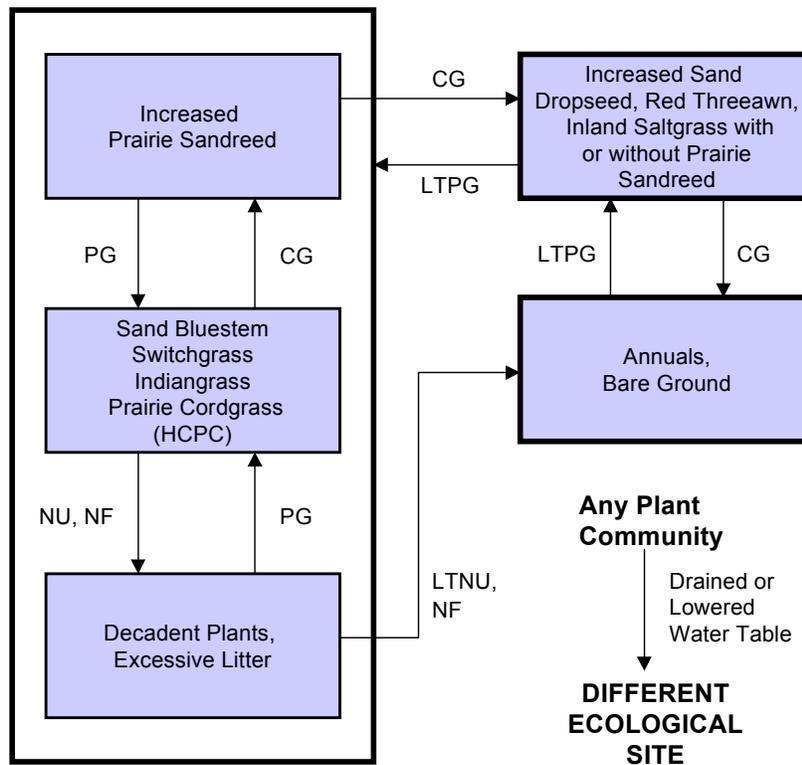
Colorado butterflyplant (*Gaura neomexicana*) and prairie gentian (*Eustoma exaltatum*) have been found on this site and are listed in the Colorado Rare Plant Field Guide.

Irrigation (pumping) or drainage will cause water table levels to drop. Sustained reduction in water table levels will cause a different ecological site to develop.

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; **LTNU** - long term non-use (>40 years); **LTPG** - long term prescribed grazing (>20 years); **NF, NU** - no fire, non-use; **PG** - prescribed grazing with adequate recovery opportunity

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Sand Bluestem, Switchgrass, Indiangrass, Prairie Cordgrass (HCPC)		
			Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1	2975 - 3325	85 - 95
sand bluestem	Andropogon hallii	ANHA	1	525 - 700	15 - 20
switchgrass	Panicum virgatum	PAVI2	1	525 - 700	15 - 20
Indiangrass	Sorghastrum nutans	SONU2	1	350 - 700	10 - 20
prairie cordgrass	Spartina pectinata	SPPE	1	350 - 700	10 - 20
prairie sandreed	Calamovilfa longifolia	CALO	1	350 - 525	10 - 15
western wheatgrass	Pascopyrum smithii	PASM	1	175 - 350	5 - 10
little bluestem	Schizachyrium scoparium	SCSC	1	35 - 175	1 - 5
alkali sacaton	Sporobolus airoides	SPAI	1	0 - 175	0 - 5
Canada wildrye	Elymus canadensis	ELCA4	1	35 - 70	1 - 2
sand dropseed	Sporobolus cryptandrus	SPCR	1	35 - 70	1 - 2
alkali muhly	Muhlenbergia racemosa	MURA	1	0 - 35	0 - 1
foxtail barley	Hordeum jubatum	HOJU	1	0 - 35	0 - 1
inland saltgrass	Distichlis spicata	DISP	1	0 - 35	0 - 1
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	0 - 35	0 - 1
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 35	0 - 1
Sandberg bluegrass	Poa secunda	POSE	1	0 - 35	0 - 1
sixweeks fescue	Vulpia octoflora	VUOC	1	0 - 35	0 - 1
Nebraska sedge	Carex nebrascensis	CANE2	1	35 - 105	1 - 3
Baltic rush	Juncus balticus	JUBA	1	0 - 35	0 - 1
other perennial grasses		2GP	1	35 - 175	1 - 5
FORBS			2	140 - 350	4 - 10
American licorice	Glycyrrhiza lepidota	GLLE3	2	35 - 70	1 - 2
showy prairie gentian	Eustoma exaltatum ssp. russellianum	EUEXR	2	35 - 70	1 - 2
Colorado butterflyplant	Gaura neomexicana ssp. coloradensis	GANEC	2	0 - 35	0 - 1
giant goldenrod	Solidago gigantea	SOGI	2	0 - 35	0 - 1
heath aster	Symphotrichum ericoides	SYER	2	0 - 35	0 - 1
penstemon	Penstemon spp.	PENST	2	0 - 35	0 - 1
verbena	Verbena spp.	VERBE	2	0 - 35	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 35	0 - 1
other perennial forbs		2FP	2	35 - 175	1 - 5
SHRUBS			3	35 - 175	1 - 5
desert false indigo	Amorpha fruticosa	AMFR	3	35 - 70	1 - 2
other shrubs		2SHRUB	3	35 - 70	1 - 2

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	2335	3150	3945
FORBS	135	245	375
SHRUBS	30	105	180
TOTAL	2500	3500	4500

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.

Sand Bluestem, Switchgrass, Indiangrass, Prairie Cordgrass Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Historically, fires occurred infrequently. This plant community can be found on areas that receive adequate recovery periods following each grazing event during the growing season. The potential vegetation is about 85-95% grasses and grass-likes, 4-10% forbs and 1-5% woody plants.

Tall warm season grasses dominate this plant community. The major grasses include sand bluestem, Indiangrass, prairie cordgrass and switchgrass. Other grasses and grass-likes occurring on the community include prairie sandreed, little bluestem, western wheatgrass, Canada wildrye, Baltic rush and Nebraska sedge. Important forbs and shrubs include American licorice, Colorado butterfly plant, prairie gentian and false indigo.

This plant community is stable, productive and is well adapted to the Northern Great Plains. The high water table supplies much of the moisture for plant growth. Plant litter is properly distributed with little movement and natural plant mortality is very low. This is a sustainable plant community in terms of soil stability, watershed function and biologic integrity.

Total annual production ranges from 2500 to 4500 pounds of air-dry vegetation per acre and will average 3500 pounds during an average 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: CO6713

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-67B; lowland water influenced soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	30	20	12	5	3	0	0

(monthly percentages of total annual growth)

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

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community toward the *Increased Prairie Sandreed Plant Community*.
- Non-use (no grazing and/or no haying) and no fire will move this plant community toward the *Decadent Plants, Excessive Litter Plant Community*. Initially, excess litter begins to build-up. Eventually native plants can show signs of mortality and decadence.

- Prescribed grazing that allows for adequate recovery opportunity following each grazing event and proper stocking will maintain the *Sand Bluestem, Switchgrass, Indiangrass, Prairie Cordgrass Plant Community (HCPC)*.

Increased Prairie Sandreed Plant Community

This plant community developed with continuous grazing without adequate recovery opportunities between grazing events. Sand bluestem, prairie cordgrass, switchgrass, Indiangrass, Nebraska sedge and false indigo have been significantly reduced. Prairie sandreed has increased. Western wheatgrass may initially increase or decrease depending upon the season of use. Baltic rush and western ragweed have increased. This plant community is at risk of losing most of the key tall warm season grasses, palatable forbs and shrubs.

The plants of this community have decreased in frequency and production compared to the HCPC. This plant community is relatively stable but at risk of losing some of the key tall grass species, palatable forbs and shrubs. The reduction of key tall grass species, deep-rooted forbs and shrubs has altered the biotic integrity of this plant community. Nutrient cycle, water cycle and energy flow may be impaired.

Total annual production, during an average year, ranges from 1200 to 3000 pounds per acre air-dry weight and will average 2000 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: CO6713

Growth curve name: Warm season dominant, cool season sub-dominant; MLRA-67B; lowland water influenced soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	30	20	12	5	3	0	0

(monthly percentages of total annual growth)

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

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community across an ecological threshold toward the *Increased Sand Dropseed, Red Threeawn, Inland Saltgrass with or without Prairie Sandreed Plant Community*.
- Prescribed grazing with adequate recovery periods between grazing events and proper stocking, will move this plant community back toward the *Sand Bluestem, Switchgrass, Indiangrass, Prairie Cordgrass, Plant Community (HCPC)*.

Decadent Plants, Excessive Litter Plant Community

This plant community developed under the absence (20 years or more) of grazing, fire and/or haying. The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community.

Much of the nutrients are tied up in excessive litter. Organic matter oxidizes in the air rather than being incorporated into the soil due to the absence of animal impact. Excessive litter levels prevent sunlight from reaching plant crowns and in time can stagnate the plant community. Tall grasses such as sand bluestem, prairie cordgrass, switchgrass and Indiangrass can become decadent and eventually die. Prescribed grazing, haying or fire followed by prescribed grazing can move this plant community toward the HCPC in a relatively short time frame.

Total annual production can vary substantially from 600 to 3000 pounds of air-dry vegetation per acre depending on how long this plant community has developed in the absence of haying, grazing or fire.

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: CO6716

Growth curve name: Warm season dominant, cool season sub-dominant, high litter; MLRA-67B; lowland water influenced soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	8	20	28	20	12	6	4	0	0

(monthly percentages of total annual growth)

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

- Prescribed grazing with adequate recovery opportunities between grazing events or prescribed burning followed by prescribed grazing will move this plant community towards the *Sand Bluestem, Switchgrass, Indiangrass, Prairie Cordgrass Plant Community (HCPC)*.
- Long term non-use (no grazing, no haying) in absence of fire will shift this plant community across an ecological threshold to the *Annuals, Bare Ground Plant Community*. This transition may take greater than 40 years to achieve.

Increased Sand Dropseed, Red Threawn, Inland Saltgrass with or without Prairie Sandreed Plant Community

This plant community develops under continuous grazing without adequate recovery opportunities between grazing events. Prairie cordgrass, sand bluestem, Indiangrass and false indigo have been removed. Sand dropseed, red threawn, inland saltgrass, foxtail barley, alkali sacaton, Baltic rush and western ragweed have increased. Kentucky bluegrass has likely invaded the community. Remnant amounts of low vigor prairie sandreed, switchgrass and western wheatgrass may still be present.

This community has lost much of its production and diversity. Nutrient cycle is impaired due to the loss of most tall grass species, deep-rooted forbs (legumes and others) and shrubs. Soil compaction can be a concern if continuously grazed during wet cycles. Desertification is advanced.

Total annual production, during an average year, ranges from 900 to 1700 pounds per acre air-dry weight and will average 1300 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: CO6718

Growth curve name: Warm season dominant; MLRA-67B; lowland water influenced soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	15	40	23	12	3	2	0	0

(monthly percentages of total annual growth)

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

- Continuous grazing which does not allow for adequate recovery periods between grazing events will shift this plant community across an ecological threshold to the *Annuals, Bare Ground Plant Community*.

- Long term prescribed grazing with adequate recovery opportunities following grazing events and proper stocking will move this plant community towards the *Increased Prairie Sandreed Plant Community* and will eventually return to the *HCPC* or associated successional plant communities assuming an adequate seed/vegetative source is available. This transition can take 20 years or more to accomplish assuming an adequate water table exists.

Annuals, Bare Ground Plant Community

This plant community develops from being continuously grazed for long periods of time especially through the growing season. The plant composition is made up of primarily foxtail barley, sixweeks fescue, western ragweed and introduced annuals such as Russian thistle and kochia. Kentucky bluegrass may persist in small amounts. Remnants of western wheatgrass, inland saltgrass and other species may be present.

Compared to the Historic Climax Plant Community, all perennial plants have been greatly reduced with only remnants of the most grazing tolerant species present. Plant diversity and production are very low. Planned rest periods during the growing season will improve the vigor of the plant species present.

Wind erosion can be a concern due to increased bare ground. Litter amounts are low. Carbon storage/nutrient cycling has been greatly reduced. Compaction, if severe enough, can affect water infiltration. Animal wastes can contaminate ground water or runoff. Desertification is obvious.

Total annual production, during an average year, ranges from 100 to 400 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: CO6714

Growth curve name: Cool season dominant, warm season sub-dominant; MLRA-67B; lowland water influenced soils.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	7	25	40	15	7	3	1	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 grazing events and proper stocking, will shift this plant community toward the *Increased Sand Dropseed, Red Threeawn, Inland Saltgrass with or without Prairie Sandreed Plant Community*. The rate of this transition can be extremely variable depending on how degraded the community has become and the availability of an adequate seed/vegetative source.

Formation of Different Ecological Site

If any plant community is subjected to persistent water table depletion due to irrigation or drainage, a different ecological site will form.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Sand Bluestem, Switchgrass, Indiangrass, Prairie Cordgrass Plant Community

The lack of shrubs in this plant community affects the expected wildlife species. Bird species expected on the HCPC include lark and grasshopper sparrow, chestnut collared longspur, lark bunting, western meadowlark, and ferruginous and Swainson's hawks. Greater prairie chicken may use the eastern parts of this site. This site provides excellent nesting habitat for pheasant and waterfowl if other habitat elements such as cropland and shallow water are nearby. The low percentage of shrubs on this site make scaled quail and lesser prairie chicken infrequent users.

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.

Increased Prairie Sandreed Plant Community and Decadent Plants, Excessive Litter Plant Community

All HCPC species are expected in these plant communities, however, the reduction in the tall grass species in these plant communities make them less attractive to many HCPC species.

Increased Sand Dropseed, Red Threawn, Inland Saltgrass with or without Prairie Sandreed Plant Community and Annuals, Bare Ground Plant Community

The shift away from tall grasses to short and mid grasses and grass like species results in a change in bird species expected here. Killdeer, McCown's longspur, horned lark, long-billed curlew, mountain plover, and burrowing owl replace the HCPC bird species as the shorter grasses become dominant.

Reptiles from the HCPC are still expected on these communities. The HCPC mammals would be expected here along with increasing numbers of black-tailed prairie dog, desert cottontail, and thirteen-lined ground squirrel.

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. Deer mouse is a common grassland species on the eastern plains. 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 muhly	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 U D U
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
Canada wildrye	U D U U	N U N N	U D U U	N U N N	N U N N	U D U U	U D U U
foxtail barley	U D N N	N P N N	U D N N	N P N N	N P N N	U D N N	U D N N
Indiangrass	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
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 cordgrass	U D D U	N N N N	U D D U	N N N N	N N N N	U D D U	U D D U
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
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
Sandberg bluegrass	N U N N	N D N N	N U N N	N D N N	N D N N	N U N N	N U N N
sixweeks fescue	N D N N	N D N N	N D N N	N D N N	N D N N	N D N N	N D N N
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
Baltic rush	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
Nebraska sedge	U P U D	U P N D	U P U D	U P N D	U P N D	U P U D	U P U D
Forbs							
American licorice	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	U U D 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
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
showy prairie gentian	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
verbena	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
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

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)
Sand Bluestem, Switchgrass, Indiangrass, Prairie Cordgrass (HCPC)	3500	1.12
Increased Prairie Sandreed	2000	0.64
Sand Dropseed, Red Threeawn, Inland Saltgrass	1300	0.42
Decadent Plant, Excessive Litter	*	*
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 varies from moderate to high and runoff potential for this site varies from moderate to low depending on and ground cover. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

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

Wood Products

No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

- (R067BY035CO) – Salt Meadow
- (R067BY038CO) – Wet Meadow
- (R067BY015CO) – Sands (formerly Deep Sands)
- (R067BY031CO) – Sandy Bottomland
Riverbottom

Similar Sites

- (R067BY035CO) – Salt Meadow
[greater production of alkali tolerant species, absence of prairie sandreed and sand bluestem]
- (R067BY031CO) – Sandy Bottomland
[absence of water table]
Riverbottom – [presence of trees and more shrubs]

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

State Correlation

This site is unique to Colorado.

Field Offices

Brighton, Burlington, Byers, Cheyenne Wells, Eads, Flagler, Fort Collins, Fort Morgan, Greeley, Holly, Hugo, Kiowa, Lakewood (metro), 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>)

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 3.1 (<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