

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Sandy Lowland

Site ID: R064XY029NE

Major Land Resource Area (MLRA): 64 – Mixed Sandy and Silty Tableland



Physiographic Features

This site occurs on nearly level floodplains and alluvial fans adjacent to streams, springs, and ponds.

Landform: alluvial fan, stream terrace, floodplain

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2,900	4,000
Slope (percent):	0	3
Water Table Depth (inches):	36	>72
Flooding:		
Frequency:	Rare	Frequent
Duration:	Very brief	Brief
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Very Low

Climatic Features

MLRA 64 is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature may also abound. The climate is the result of this MLRA's location near the geographic center of North America. There are few natural barriers on the Northern Great Plains and air masses move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 14 to 20 inches per year. The normal average annual temperature is about 47°F. January is the coldest month with average temperatures ranging from about 21°F (Wood, South Dakota (SD)), to about 25°F (Hemingford, Nebraska (NE)). July is the warmest month with temperatures averaging from about 70°F (Keeline 3 W, Wyoming (WY)), to about 76°F (Wood, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 55°F. This large annual range attests to the continental nature of this area's climate. Hourly winds average about 11 miles per hour (mph) annually, ranging from about 13 mph during the spring to about 10 mph during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 mph.

Growth of cool-season plants begins in early to mid-March, slowing or ceasing in late June. Warm-season plants begin growth about mid-May and continue to early or mid-September. Greenup of cool-season plants may occur in September and October when adequate soil moisture is present.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	115	143
Freeze-free period (days):	137	163
Mean Annual Precipitation (inches):	14	20

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.42	0.52	9.0	35.8
February	0.48	0.61	14.6	40.7
March	0.90	1.22	21.0	47.5
April	1.83	2.15	28.9	61.3
May	2.22	3.38	38.3	72.2
June	2.05	3.27	47.3	82.1
July	1.63	2.73	53.9	90.1
August	1.09	1.96	52.3	89.3
September	1.09	1.58	42.4	79.5
October	0.80	1.38	32.6	66.6
November	0.56	0.65	20.4	49.0
December	0.42	0.50	13.4	38.4

Climate Stations		Period	
Station ID	Location or Name	From	To
NE3755	Hemingford, NE	1964	1999
WY5085	Keeline 3 W, WY	1953	1986
SD9442	Wood, SD	1948	1999

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

Riparian and Wetland Features

No riparian areas or wetland features are directly associated with this site.

Representative Soil Features

The features common to soils in this site are the very fine sandy loam to loamy fine sand textured surface soils and slopes of zero to three percent. These soils have water tables below the surface for all of the growing season. The water table is nonsaline and nonalkaline. The soils in this site are somewhat poorly drained to well-drained and formed in loamy or sandy alluvium. The surface layer is four to eight inches thick. The texture of the subsurface layers ranges from loam to sand. This site should show no evidence of rills, wind scoured areas, or pedestalled plants. Water flow paths are typically indistinguishable. The soil surface is stable and intact. Subsurface soil layers are not restrictive to water movement and root penetration.

More information can be found in the various soil survey reports. Contact the local United States Department of Agriculture (USDA) Service Center for soil survey reports that include more detail specific to your location.

Parent Material Kind: alluvium
Parent Material Origin: mixed
Surface Texture: fine sandy loam, loamy fine sand, loamy very fine sand
Surface Texture Modifier: none
Subsurface Texture Group: sandy
Surface Fragments ≤3" (% Cover): 0
Surface Fragments >3" (%Cover): 0
Subsurface Fragments ≤3" (% Volume): 0-6
Subsurface Fragments >3" (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	somewhat poorly	well
Permeability Class:	moderately rapid	very rapid
Depth (inches):	80	80
Electrical Conductivity (mmhos/cm)*:	0	4
Sodium Absorption Ratio*:	0	6
Soil Reaction (1:1 Water)*:	5.1	8.4
Soil Reaction (0.1M CaCl2)*:	NA	NA
Available Water Capacity (inches)*:	3	6
Calcium Carbonate Equivalent (percent)*:	0	10

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

Plant Communities

Ecological Dynamics of the Site

This site developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfire (often of light intensities), and other biotic and abiotic factors that typically influence soil/site development. Changes will occur in the plant communities due to short-term weather variations, impacts of native and/or exotic plant and animal species, and management actions. While the following plant community descriptions describe more typical transitions between communities that will occur, severe disturbances, such as periods of well below average precipitation, can cause significant shifts in plant communities and/or species composition.

This site includes depressional areas which allow for deep-rooted native warm-season grasses to utilize subsurface moisture. It is often a transitional area between Sandy and Subirrigated sites. If management common to Subirrigated sites extends onto Sandy Lowland sites, the plant community can quickly shift due to the limited availability of subsoil moisture. Under favorable vegetative management treatments, the site can return to the Sand Bluestem/Prairie Sandreed/Switchgrass Plant Community.

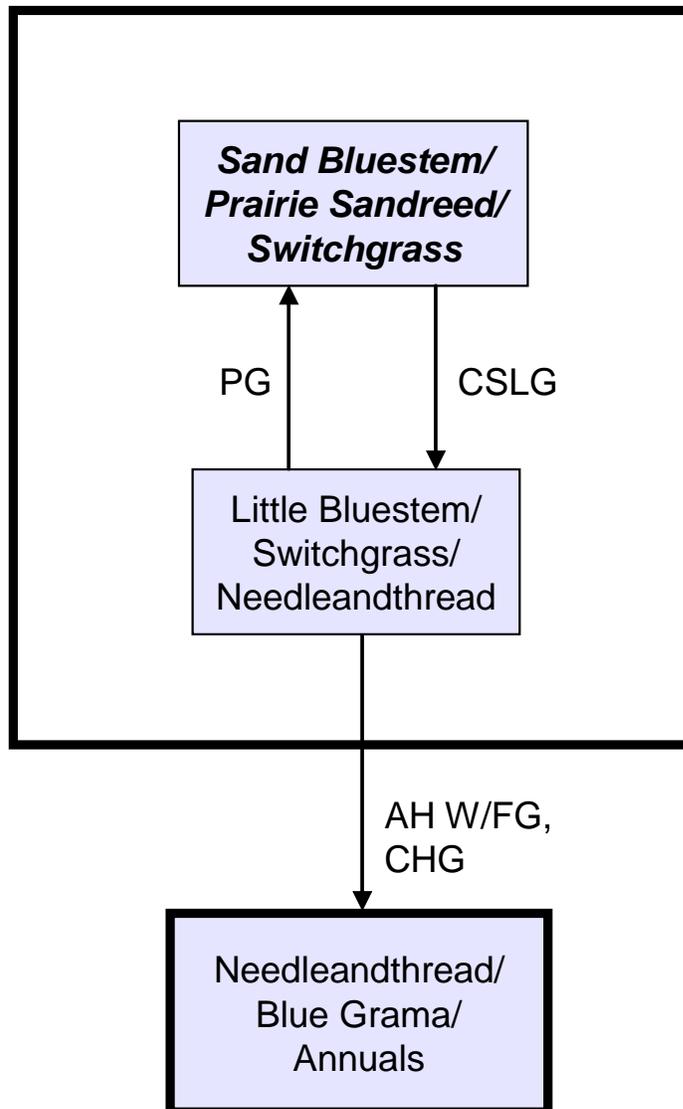
Sand sagebrush occurs more frequently in the western portion of the MLRA and decreases significantly in the central and eastern portion of the MLRA. Little bluestem occurs mainly in the central and eastern portions of the MLRA and decreases as you move west. As this site deteriorates, species such as prairie sandreed, little bluestem, sand dropseed, and blue grama will increase initially. Species such as sand bluestem and switchgrass will decrease in frequency and production. With continued improper management, prairie sandreed and little bluestem will also decrease with a significant increase in cool-season grasses and forbs.

Interpretations are primarily based on the Sand Bluestem/Prairie Sandreed/Switchgrass Plant Community. It has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and

historical accounts also have been used. Plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways between communities. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



AH W/FG - Annual haying with fall grazing; **CHG** - Continuous heavy grazing (heavy levels of grazing of a unit during most or all of the growing season); **CSLG** - Continuous season-long grazing (grazing of a unit for an entire growing season); **PG** - Prescribed grazing (planned, controlled harvest of vegetation with grazing or browsing animals – see FOTG, Section IV, 528).

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SYMBOL	Sand Bluestem/Prairie Sandreed/ Switchgrass			Little Bluestem/Prairie Sandreed/Needleandthread			Needleandthread/Blue Grama/Annuals		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
GRASSES & GRASS-LIKES			2210 - 2470	85 - 95		1600 - 1800	80 - 90		1200 - 1440	75 - 90
TALL & MID WARM SEASON		1	1300 - 2340	50 - 90	1	400 - 1000	20 - 50	1	0 - 80	0 - 5
sand bluestem	ANHA	1	520 - 1040	20 - 40	1	100 - 200	5 - 10			
prairie sandreed	CALO	1	390 - 780	15 - 30	1	100 - 400	5 - 20	1	0 - 80	0 - 5
little bluestem	SCSC	1	390 - 780	15 - 30	1	100 - 600	5 - 30	1	0 - 80	0 - 5
switchgrass	PAVI2	1	260 - 520	10 - 20	1	100 - 200	5 - 10			
NATIVE GRASSES/GRASS-LIKES		2	130 - 650	5 - 25	2	300 - 900	15 - 45	2	320 - 1280	20 - 80
needleandthread	HECOC8	2	130 - 390	5 - 15	2	100 - 300	5 - 15	2	80 - 400	5 - 25
Indiangrass	SONU2	2	0 - 130	0 - 5	2	0 - 20	0 - 1			
blue grama	BOGR2	2	0 - 260	0 - 10	2	100 - 300	5 - 15	2	80 - 400	5 - 25
hairy grama	BOHI2	2	0 - 130	0 - 5	2	0 - 100	0 - 5	2	0 - 80	0 - 5
prairie junegrass	KOMA	2	0 - 52	0 - 2	2	0 - 20	0 - 1	2	16 - 80	1 - 5
sand lovegrass	ERTR3	2	0 - 130	0 - 5	2	0 - 20	0 - 1			
sand dropseed	SPCR	2	0 - 130	0 - 5	2	20 - 200	1 - 10	2	80 - 320	5 - 20
purple lovegrass	ERSP	2	0 - 130	0 - 5	2	0 - 20	0 - 1			
sand paspalum	PASE5	2	0 - 52	0 - 2	2	0 - 40	0 - 2	2	0 - 80	0 - 5
Scribner panicum	DIOLS	2	0 - 52	0 - 2	2	0 - 100	0 - 5	2	0 - 80	0 - 5
western wheatgrass	PASM	2	0 - 130	0 - 5	2	0 - 200	0 - 10	2	16 - 160	1 - 10
sedge	CAREX	2	26 - 130	1 - 5	2	20 - 100	1 - 5	2	16 - 160	1 - 10
other perennial grasses	2GP	2	0 - 130	0 - 5	2	0 - 100	0 - 5	2	0 - 80	0 - 5
NON-NATIVE GRASSES		3			3	0 - 100	0 - 5	3	0 - 240	0 - 15
cheatgrass	BRTG				3	0 - 100	0 - 5	3	0 - 240	0 - 15
bluegrass	POA				3	0 - 100	0 - 5	3	0 - 240	0 - 15
FORBS		4	130 - 260	5 - 10	4	100 - 200	5 - 10	4	80 - 240	5 - 15
cudweed sagewort	ARLU	4	0 - 26	0 - 1	4	0 - 60	0 - 3	4	0 - 80	0 - 5
cutleaf ironplant	MAPI	4	0 - 26	0 - 1	4	0 - 20	0 - 1	4	0 - 16	0 - 1
dotted gayfeather	LIPU	4	0 - 52	0 - 2	4	0 - 20	0 - 1	4	0 - 16	0 - 1
evening-primrose	OENOT	4	0 - 26	0 - 1	4	0 - 20	0 - 1	4	0 - 16	0 - 1
false boneset	BREU	4	0 - 26	0 - 1	4	0 - 20	0 - 1	4	0 - 16	0 - 1
goldenrod	SOLID	4	0 - 52	0 - 2	4	0 - 40	0 - 2	4	0 - 32	0 - 2
heath aster	SYER	4	0 - 52	0 - 2	4	0 - 100	0 - 5	4	0 - 80	0 - 5
larkspur	DELPH	4	0 - 26	0 - 1	4	0 - 20	0 - 1	4	0 - 16	0 - 1
penstemon	PENST	4	0 - 52	0 - 2	4	0 - 20	0 - 1			
prairie coneflower	RACO3	4	0 - 26	0 - 1	4	0 - 20	0 - 1			
purple prairie clover	DAPU5	4	0 - 52	0 - 2	4	0 - 20	0 - 1	4	0 - 16	0 - 1
stiff sunflower	HEPA19	4	0 - 26	0 - 1	4	0 - 20	0 - 1			
thistle	CIRSI				4	0 - 20	0 - 1	4	0 - 80	0 - 5
verbena	VERBE	4	0 - 26	0 - 1	4	0 - 100	0 - 5	4	0 - 80	0 - 5
western ragweed	AMPS	4	0 - 26	0 - 1	4	0 - 100	0 - 5	4	0 - 240	0 - 15
other perennial forbs	2FP	4	0 - 52	0 - 2	4	0 - 40	0 - 2	4	0 - 32	0 - 2
other annual forbs	2FA	4	0 - 26	0 - 1	4	0 - 40	0 - 2	4	0 - 48	0 - 3
SHRUBS		5	0 - 130	0 - 5	5	0 - 200	0 - 10	5	0 - 160	0 - 10
cactus	OPUNT				5	0 - 40	0 - 2	5	0 - 160	0 - 10
leadplant	AMCA6	5	0 - 52	0 - 2	5	0 - 20	0 - 1			
rose	ROSA5	5	0 - 52	0 - 2	5	0 - 60	0 - 3	5	0 - 80	0 - 5
sand sagebrush	ARFI2	5	0 - 26	0 - 1	5	0 - 40	0 - 2	5	0 - 160	0 - 10
other shrubs	2SHRUB	5	0 - 78	0 - 3	5	0 - 100	0 - 5	5	0 - 80	0 - 5
Annual Production lbs./acre			LOW RV HIGH			LOW RV HIGH			LOW RV HIGH	
GRASSES & GRASS-LIKES			2075 - 2340 - 2790			1605 - 1750 - 1890			1325 - 1360 - 1385	
FORBS			125 - 195 - 275			95 - 150 - 205			75 - 160 - 250	
SHRUBS			0 - 65 - 135			0 - 100 - 205			0 - 80 - 165	
TOTAL			2200 - 2600 - 3200			1700 - 2000 - 2300			1400 - 1600 - 1800	

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. Refer to PLANTS database for scientific names and codes: <http://plants.usda.gov>

Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility but they 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” (DPCs). According to the USDA Natural Resources Conservation Service (NRCS) National Range and Pasture Handbook, DPCs 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/Prairie Sandreed/Switchgrass Plant Community

Interpretations are based primarily on the Sand Bluestem/Prairie Sandreed/Switchgrass Plant Community (this is also considered to be climax). This plant community is found on areas that are properly managed with grazing and or prescribed burning. Harvesting hay biennially at a different time during the growing season will allow this plant community to persist. The potential vegetation is about 90 percent grasses, 5 percent forbs, and 5 percent woody plants. Tall, warm-season grasses predominate.

The major grasses include Sand bluestem, prairie sandreed, switchgrass, and little bluestem. Other grasses occurring in this plant community include needleandthread, Indiangrass, hairy and blue grama, and grass-likes including sedges.

This plant community is extremely resilient and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. Plant litter is properly distributed with very little movement offsite and natural plant mortality is very low. This is a healthy and sustainable plant community (site/soil stability, watershed function, and biologic integrity).

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: NE6410

Growth curve name: Pine Ridge/Badlands, lowland warm-season dominant.

Growth curve description: Warm-season dominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	15	25	25	17	6	2	0	0

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

- Continuous season-long grazing will convert this plant community to the *Little Bluestem/Switchgrass/Needleandthread Plant Community*. Continuous heavy grazing tends to accelerate this movement.

Little Bluestem/Switchgrass/Needleandthread Plant Community

Plants resistant to grazing are maintaining themselves in this plant community which developed under grazing by domestic livestock. Most of the palatable plants from the Sand Bluestem/Prairie Sandreed/Switchgrass Plant Community are present but occur in lesser amounts. The potential vegetation is about 85 percent grasses or grass-like plants, 10 percent forbs, and 5 percent shrubs. Dominant grasses include prairie sandreed and little bluestem. Grasses of secondary importance include blue or hairy grama, needleandthread, sand dropseed, and western wheatgrass. Forbs commonly found in this plant community include cudweed sagewort, heath aster, goldenrod, verbena, and western ragweed. Indiangrass is no longer present and sand bluestem and perennial forbs are present in lesser amounts.

This plant community has a higher percentage of cool season grasses and forbs than the Sand Bluestem/Prairie Sandreed/Switchgrass Plant Community. Lesser amounts of desirable tall warm-season grasses reduces production and the community’s ability to increase production in favorable years. The soil surface has remained intact. This plant community is considered stable but is at risk if

a major shift in climate or overgrazing occurs. The resiliency of this plant community is moderate depending on the intensity and duration of disturbance. Infiltration and runoff are not greatly affected due to the nature of the soil.

The close proximity of this site to the Subirrigated Ecological Site (ES) often leads to identical management scenarios on both areas. The lack of subsoil moisture reduces the ability of the Sandy Lowland site grasses to adequately recover from annual mowing to maintain plant vigor and health. One option is to hay this site biennially and graze the site every fall in conjunction with the Subirrigated site. Fencing along ES boundaries provides additional management scenarios on both Subirrigated and Sandy Lowland sites. This option should be considered if adequate water facilities exist.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: NE6409

Growth curve name: Pine Ridge/Badlands, warm-season dominant, cool-season subdominant.

Growth curve description: Warm-season dominant, cool-season subdominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	8	18	27	23	12	6	3	0	0

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

- Continuous season-long grazing or annual haying followed by fall grazing will convert this plant community to the *Needleandthread/Blue Grama/Annuals Plant Community*. This shift crosses the threshold and requires reseeding to return to a productive, stable plant community within a forage suitability group (FSG).
- Prescribed grazing with adequate recovery periods will return this community to the *Sand Bluestem/Prairie Sandreed/Switchgrass Plant Community*.

Needleandthread/Blue Grama/Annuals Plant Community

This plant community develops with heavy livestock grazing, usually season-long, or with annual haying followed by fall grazing. Plant diversity is diminished as the bluestems, prairie sandreed, and switchgrass are removed from the plant community. Small isolated plants may exist in a prostrate form to avoid defoliation. The potential vegetation is about 80 percent grass or grass-like plants, 10 percent forbs, and 10 percent shrubs. Dominate grasses include needleandthread, blue or hairy grama, and sand dropseed. Other grasses or grass-likes include annual brome, Kentucky bluegrass, prairie Junegrass, Scribner panicum, western wheatgrass, and sedges. Dominant forbs include western ragweed, verbena, cudweed sagewort, thistle, and heath aster. Plant diversity is low. Sand sagebrush shows significant increase in the western portion of the MLRA, with cactus and rose showing the most increase in the central and eastern portions of the MLRA. Annual haying delays the increase of sand sagebrush and rose but increases the cactus component in this community.

This plant community is fairly resistant to change. If disturbed, it is not resilient due to the low species diversity. Soil erosion is low. The water cycle is reduced because of the lack of surface litter. Infiltration is moderate due to soil texture which also reduces runoff.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during an average year:

Growth curve number: NE6407

Growth curve name: Pine Ridge/Badlands, cool-season dominant, warm-season subdominant.

Growth curve description: Cool-season dominant, warm-season subdominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	25	30	15	10	2	5	0	0

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

Due to the lack of native tall warm-season grass remnants and large amounts of blue and hairy grama, annual brome and Kentucky bluegrass, improved management techniques have little effect on shifting the plant community. To improve plant diversity and forage production, suppression of the existing plant community followed by re-seeding will be necessary. See FSGs for additional information.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

MLRA 64 lies within the drier portion of northern mixed-grass prairie ecosystem where sagebrush steppes to the west yield to grassland steppes to the east. Prior to European settlement, this area consisted of diverse grass/shrub land habitats interspersed with varying densities of depressional, instream wetlands, and woody riparian corridors. These habitats provided critical life cycle components for many of its users. Many species of grassland birds, small mammals, reptiles, amphibians, and herds of roaming bison, elk, and pronghorn were among the inhabitants adapted to this semi-arid region. Roaming herbivores, as well as, several small mammal and insect species, were the primary consumers linking the grassland resources to predators such as the wolf, mountain lion, and grizzly bear, as well as, smaller carnivores such as the coyote, bobcat, fox, and raptors. The prairie dog was once abundant; however, the species remains a keystone species within its range. The black-footed ferret, burrowing owl, ferruginous hawk, mountain plover, and swift fox were associated with prairie dog complexes.

Historically, the northern mixed-grass prairie was a disturbance-driven ecosystem with fire, herbivory, and climate functioning as the primary disturbance factors either singly or in combination. Following European settlement, livestock grazing, cropland conversion, elimination of fire, energy development, and other anthropogenic factors influenced species composition and abundance. Introduced and invasive species further impacted plant and animal communities. The bison was a historical keystone species but have been extirpated as a free-ranging herbivore. The loss of the bison and reduction of prairie dog populations, and fire as ecological drivers greatly influenced the character of the remaining native plant communities and altered wildlife habitats. Human development has reduced habitat quality for area-sensitive species.

Within MLRA 64, the Sandy Lowland ES provides upland grassland cover with an associated forb and shrub component. It was typically part of a an expansive grassland landscape that included combinations of Badlands, Thin Breaks, Clayey, Claypan, Dense Clay, Loamy, Saline, Sandy, Shallow, Overflow, Subirrigated, and Terrace ESs. This site provided habitat for species requiring unfragmented grassland. Important habitat features and components found commonly or exclusively on this site may include sharp-tailed grouse leks; upland nesting habitat for grassland birds, forbs and insects for brood habitat; and a forage source for small and large herbivores. Many grassland and shrub steppe nesting bird populations are declining. Extirpated species include free-ranging American bison, grizzly bear, gray wolf, black-footed ferret, mountain plover, Rocky Mountain locust, and swift fox.

The majority of this ES remains intact and provides increasingly important habitat for grassland and shrub steppe nesting birds, small rodents, coyote, and a variety of reptiles, amphibians, and insects. Invasive species such as Kentucky bluegrass and cheatgrass have impacted the biological integrity of

the site for some grassland birds. Changes in historic fire regime and domestic grazing have impacted the forb/shrub/grass percentages.

Sand Bluestem/Prairie Sandreed/Switchgrass (HCPC) and Little Bluestem/Switchgrass/Needleandthread: The predominance of grasses plus high diversity of forbs and shrubs in this community favors grazers and mixed-feeders such as pronghorn antelope. Insects, such as pollinators, play a large role in maintaining the forb community and provide a forage base for grassland birds and other species. The complex plant structural diversity provides habitat for a wide array of migratory and resident birds. Grasshopper and Savannah sparrow, lark bunting, western meadowlark, and sharp-tailed grouse are common and benefit from the structure and composition this plant community provides. Diverse prey populations are available for grassland raptors such as ferruginous hawk, Swainson's hawk, golden eagle, and prairie falcon.

The diversity of grasses and forbs provide high nutrition levels for small and large herbivores including voles, mice, spotted ground squirrel, desert cottontail, white-tailed and black-tailed jackrabbit, and deer. The moderately high stature of this plant community provides thermal, protective, and escape cover for herbivores and grassland birds. Predators utilizing this plant community include coyote, American badger, red fox, and long-tailed weasel. This plant community provides limited habitat for amphibians, mostly toads (i.e., Great Plains, Woodhouse's, and Plains spadefoot). Prey abundance and shade opportunities may attract multiple reptile species such as gopher snake, milk snake, prairie rattlesnake, and western ornate box turtle to this site. Several species of sand loving lizards such as the lesser earless lizard, prairie lizard, many-lined skink, and six-lined racerunner utilize this site.

Resulting from continuous season-long grazing, the plant community shifts to medium height plants such as little bluestem and needleandthread. The forb and shrub diversity has not substantially changed; however, shrub abundance has increased. The increase in shrub abundance and shift to medium height plant community does not significantly alter the wildlife community.

Needleandthread/Blue Grama/Annuals: Resulting from annual haying with fall grazing or continuous heavy grazing, needleandthread and blue grama will dominate. Forb abundance increases but forb diversity declines. This increase along with the abundance of western ragweed and dropseed provide a substantial high quality seed source for small herbivores including voles, mice, and spotted ground squirrels.

A shift to shorter plant structure will favor prairie dog expansion and associate species such as ferruginous hawk, burrowing owl, tiger salamander, and swift fox. Species such as horned lark, long-billed curlew, upland sandpiper, and white-tailed and black-tailed jackrabbit will increase due to the loss of the tall grass component. Reptile species such as gopher snake, milk snake, prairie rattlesnake, western ornate box turtle, lesser earless lizard, prairie lizard, many-lined skink, and six-lined racerunner will continue utilize this site.

The short stature of this plant community limits thermal, protective, and escape cover. Predators utilizing this plant community include coyote, American badger, red fox, and long-tailed weasel.

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses & Grass-like							
blue grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
hairy grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
Indiangrass	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
little bluestem	U D D U	N D N N	U D D U	N D N N	N D N N	U D D U	U D D U
needleandthread	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
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
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
purple lovegrass	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
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	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
sand lovegrass	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
sand paspalum	N U U N	N U N N	N U U N	N U N N	N U N N	N U U N	N U U N
Scribner panicum	U U D U	N U N N	U U D U	N U N N	N U N N	U U D U	U U D U
sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
switchgrass	U D D U	U D U U	U D D U	N N N N	N N N N	U D D U	U D D U
western wheatgrass	U P D U	N D N N	U P D U	N D N N	N D N N	U P D U	U P D U
Forbs							
cudweed 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
cutleaf ironplant	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
dotted gayfeather	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 P P U
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
false boneset	U U D U	N D U N	U U D U	N D U N	N D U N	U U D U	N D U N
goldenrod	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	N U U N
heath aster	U U D U	U U P U	U U D U	U U P U	U U P U	U U D U	U U P U
larkspur	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
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 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 P P U
purple 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
stiff sunflower	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
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 U U
western ragweed	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
Shrubs							
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
rose	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U
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

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 annual, suggested initial stocking rates with average growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of conservation planning. Often, the current plant composition does not entirely match any particular plant community (as described in this ES Description). Because of this, a resource inventory is necessary to document plant composition and production. More accurate carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data and actual stocking records particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Average Annual Production (lbs./acre, air-dry)	Stocking Rate* (AUM/acre)
Sand Bluestem/Prairie Sandreed/Switchgrass	2,600	0.82
Little Bluestem/Switchgrass/Needleandthread	2,000	0.63
Needleandthread/Blue Grama/Annuals	1,600	0.51

*Based on 790 lbs./acre (air-dry weight) per Animal Unit Month (AUM) and on 25 percent harvest efficiency (refer to USDA NRCS, National Range and Pasture Handbook).

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage. During the dormant period, the forage for livestock will likely be lacking protein to meet livestock requirements, and added protein will allow ruminants to better utilize the energy stored in grazed plant materials. A forage quality test (either directly or through fecal sampling) should be used to determine the level of supplementation needed.

Hydrology Functions

Moisture conditions are ideal for forage production on this site. Soils on this site are in Hydrologic Soil Group A and B. Although most of these soils are very permeable, water tables provide subirrigation of grasses and other vegetation. Surrounding upland areas tend to also have permeable soils and surface inflow peaks on these sites are often muted. These sites are rarely to occasionally flooded. Refer to Section 4, NRCS National Engineering Handbook 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

Seed harvest of native plant species can provide additional income on this site.

Supporting Information

Associated Sites

- (064XY024NE) – Subirrigated
- (064XY011NE) – Sandy 14-17" P.Z.
- (064XY032NE) – Sandy 17-20" P.Z.

Similar Sites

- (064XY024NE) – Subirrigated [cordgrass present; higher production]
- (064XY011NE & 064XY032NE) – Sandy 14-17" P.Z. & Sandy 17-20" P.Z. [less switchgrass; lower production]

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range-trained personnel were also used. Those involved in developing this site include: Stan Boltz, Range Management Specialist (RMS), NRCS; Jill Epley, RMS, NRCS; Rick

Peterson, RMS, NRCS; David Steffen, RMS, NRCS; Jeff Vander Wilt; RMS, NRCS; and Phil Young, Soil Scientist, NRCS.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417				

State Correlation

This site has been correlated with NE, SD, and WY in MLRA 64.

Field Offices/Counties

Alliance, NE	Box Butte	Kadoka, SD	Jackson	Rushville, NE	Sheridan
Bridgeport, NE	Morrill	Lusk, WY	Niobrara	Scottsbluff, NE	Scottsbluff
Chadron, NE	Dawes/Sioux	Martin, SD	Bennett/Shannon	Torrington, WY	Goshen
Custer, SD	Custer	Pine Ridge, SD	Pine Ridge IR	Valentine, NE	Cherry
Douglas, WY	Converse	Rapid City, SD	Pennington	Wall, SD	East Pennington
Hot Springs, SD	Fall River	Rosebud, SD	Rosebud IR	Wheatland, WY	Platte
White River, SD	Mellette/Todd				

Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 25a – Pine Ridge Escarpment, 43h – White River Badlands, and 43i – Keya Paha Tablelands.

Other References

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

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

USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, NRCS, Various Published Soil Surveys.

Site Description Approval

NE, State Range Management Specialist

Date

SD, State Range Management Specialist

Date

WY, State Range Management Specialist

Date