

United States Department of Agriculture Natural Resources Conservation Service

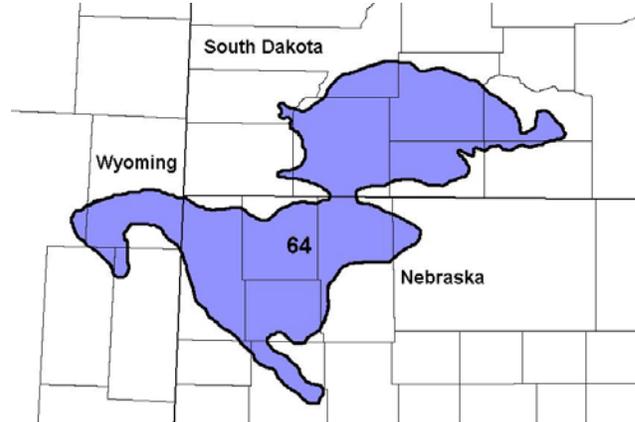
Ecological Site Description

Site Type: Rangeland

Site Name: Very Shallow

Site ID: R064XY047NE

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



Physiographic Features

This site typically occurs on gently to steeply sloping uplands.

Landform: stream terrace, knoll, ridge

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2,900	4,000
Slope (percent):	2	40
Water Table Depth (inches):	None	None
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Very low	Medium

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):	138	143
Freeze-free period (days):	161	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 common features of soils in this site are the gravelly sand to gravelly clay loam textured subsoils and slopes of 2 to 40 percent. The soils in this site are well-drained and formed in soft siltstone, sandstone, porcelanite, or alluvium. The gravelly loam surface layer is four to eight inches thick. The soils have a moderate infiltration rate. This site 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. Subsurface soil layers are restrictive to water movement and root penetration.

These soils are mainly susceptible to water erosion. The hazard of water erosion increases on slopes greater than about 15 percent. Low available water capacity caused by the shallow rooting depth strongly influences the soil-water-plant relationship.

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, outwash
Parent Material Origin: sedimentary, unspecified
Surface Texture: loam
Surface Texture Modifier: gravelly, very gravelly
Subsurface Texture Group: loamy
Surface Fragments ≤3” (% Cover): 0-25
Surface Fragments >3” (%Cover): 0-10
Subsurface Fragments ≤3” (% Volume): 20-70
Subsurface Fragments >3” (% Volume): 6-65

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	excessively
Permeability Class:	moderate	moderately rapid
Depth (inches):	5	10
Electrical Conductivity (mmhos/cm)*:	0	4
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	6.1	8.4
Soil Reaction (0.1M CaCl₂)*:	NA	NA
Available Water Capacity (inches)*:	1	3
Calcium Carbonate Equivalent (percent)*:	0	15

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

Plant Communities

Ecological Dynamics of the Site

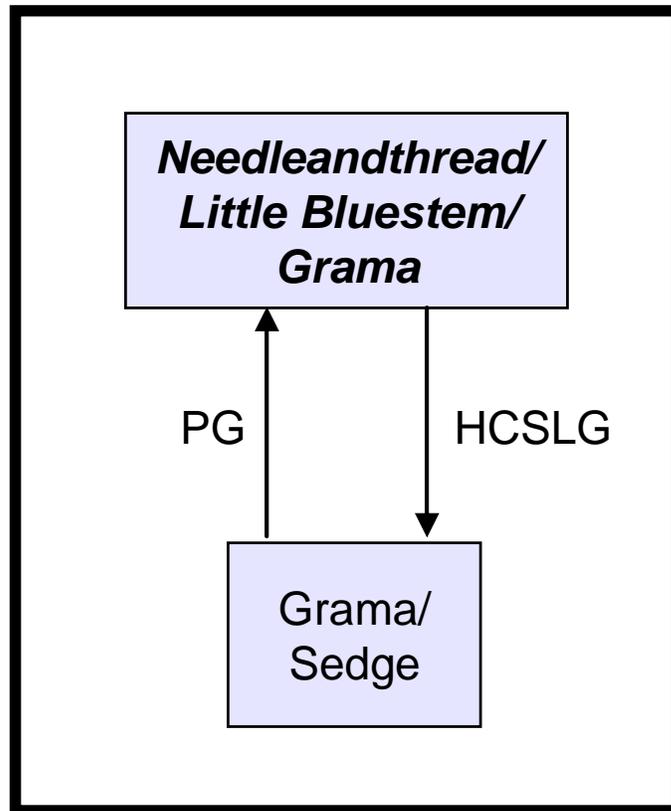
This site developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfire (often of light intensities), and other biotic and abiotic factors that typically influence soil/site development. Changes will occur 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.

Continuous season-long grazing (during the typical growing season of May through October) and/or repeated seasonal grazing (e.g., every spring, every summer) without adequate recovery periods following each grazing occurrence causes this site to depart from the Needleandthread/Little Bluestem/Grama Plant Community. Species, such as threadleaf sedge and blue grama, will initially increase. Plains muhly, western wheatgrass, bluebunch wheatgrass, little bluestem, and sideoats grama will decrease in frequency and production and later disappear. Heavy continuous grazing causes blue grama and/or threadleaf sedge to dominate.

Interpretations are primarily based on the Needleandthread/Little Bluestem/Grama 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 diagram illustrates the common plant communities and vegetation states commonly occurring on the site and the transition pathways between communities and states. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



HCSLG - Heavy, continuous season-long grazing (grazing a unit for an entire growing season well above recommended stocking rates);
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	Needleandthread/Little Bluestem/Grama			Grama/Sedge		
		Group	lbs./acre	% Comp	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			675 - 765	75 - 85		350 - 425	70 - 85
needleandthread	HECOC8	1	90 - 180	10 - 20	1	0 - 25	0 - 5
MID WARM-SEASON GRASSES			90 - 180	10 - 20		0 - 25	0 - 5
little bluestem	SCSC	2	90 - 135	10 - 15	2	0 - 25	0 - 5
plains muhly	MUCU3	2	18 - 45	2 - 5	2	0 - 5	0 - 1
GRAMA		3	180 - 360	20 - 40	3	125 - 225	25 - 45
sideoats grama	BOCU	3	90 - 225	10 - 25	3	10 - 50	2 - 10
blue grama	BOGR2	3	45 - 180	5 - 20	3	100 - 200	20 - 40
hairy grama	BOHI2	3	45 - 90	5 - 10	3	25 - 75	5 - 15
WHEATGRASS		4	45 - 90	5 - 10	4	5 - 25	1 - 5
western wheatgrass	PASM	4	45 - 90	5 - 10	4	5 - 25	1 - 5
thickspike wheatgrass	ELLAL	4	0 - 45	0 - 5	4	0 - 10	0 - 2
OTHER NATIVE GRASSES		5	9 - 45	1 - 5	5	10 - 50	2 - 10
sand dropseed	SPCR	5	0 - 18	0 - 2	5	0 - 25	0 - 5
prairie junegrass	KOMA	5	9 - 45	1 - 5	5	0 - 15	0 - 3
Sandberg bluegrass	POSE	5	9 - 18	1 - 2	5	5 - 15	1 - 3
bluebunch wheatgrass	PSSP6	5	0 - 45	0 - 5			
threeawn	ARIST	5	0 - 9	0 - 1	5	5 - 25	1 - 5
prairie sandreed	CALO	5	0 - 45	0 - 5	5	0 - 5	0 - 1
other perennial grasses	2GP	5	0 - 45	0 - 5	5	0 - 15	0 - 3
GRASS-LIKES		6	45 - 135	5 - 15	6	100 - 175	20 - 35
threadleaf sedge	CAFI	6	45 - 135	5 - 15	6	100 - 175	20 - 35
sedge	CAREX	6	0 - 18	0 - 2	6	0 - 75	0 - 15
FORBS		7	45 - 135	5 - 15	7	25 - 75	5 - 15
American pasqueflower	PUPA5	7	0 - 18	0 - 2	7	0 - 10	0 - 2
cudweed sagewort	ARLU	7	9 - 27	1 - 3	7	5 - 30	1 - 6
cutleaf ironplant	MAPI	7	0 - 18	0 - 2	7	0 - 10	0 - 2
dotted gayfeather	LIPU	7	9 - 45	1 - 5	7	5 - 25	1 - 5
erigonum	ERIOG	7	0 - 9	0 - 1	7	0 - 5	0 - 1
green sagewort	ARDR4	7	0 - 18	0 - 2	7	0 - 40	0 - 8
hairy goldaster	HEVI4	7	9 - 36	1 - 4	7	5 - 25	1 - 5
heath aster	SYER	7	9 - 27	1 - 3	7	5 - 25	1 - 5
Indian breadroot	PEES	7	0 - 18	0 - 2			
milkvetch	ASTRA	7	0 - 9	0 - 1	7	0 - 5	0 - 1
prairie coneflower	RACO3	7	9 - 27	1 - 3	7	0 - 10	0 - 2
prairie smoke	GETR	7	0 - 18	0 - 2	7	0 - 10	0 - 2
purple coneflower	ECAN2	7	9 - 27	1 - 3			
purple prairie clover	DAPU5	7	9 - 27	1 - 3			
pussytoes	ANTEN	7	9 - 18	1 - 2	7	5 - 15	1 - 3
rush skeletonweed	LYJU	7	0 - 18	0 - 2	7	0 - 15	0 - 3
scarlet gaura	GACO5	7	0 - 18	0 - 2	7	0 - 10	0 - 2
scarlet globemallow	SPCO	7	0 - 18	0 - 2	7	5 - 15	1 - 3
spiny phlox	PHHO	7	9 - 18	1 - 2	7	5 - 15	1 - 3
stemless hymenoxys	TEAC	7	0 - 18	0 - 2	7	0 - 10	0 - 2
wild onion	ALLIU	7	0 - 9	0 - 1	7	0 - 5	0 - 1
other perennial forbs	2FP	7	0 - 27	0 - 3	7	0 - 15	0 - 3
SHRUBS		8	45 - 90	5 - 10	8	25 - 75	5 - 15
broom snakeweed	GUSA2	8	0 - 9	0 - 1	8	5 - 40	1 - 8
cactus	OPUNT	8	0 - 18	0 - 2	8	5 - 25	1 - 5
fringed sagewort	ARFR4	8	9 - 27	1 - 3	8	10 - 40	2 - 8
rose	ROSA5	8	9 - 27	1 - 3	8	5 - 15	1 - 3
skunkbush sumac	RHTR	8	0 - 27	0 - 3	8	0 - 25	0 - 5
yucca	YUGL	8	0 - 27	0 - 3	8	10 - 40	2 - 8
other shrubs	2SHRUB	8	0 - 27	0 - 3	8	0 - 15	0 - 3

Annual Production lbs./acre	LOW	RV	HIGH	LOW	RV	HIGH
GRASSES & GRASS-LIKES	420	743	-965	260	400	-540
FORBS	40	90	-140	20	50	-80
SHRUBS	40	68	-95	20	50	-80
TOTAL	500	900	-1200	300	500	-700

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.

Needleandthread/Little Bluestem/Grama Plant Community

Interpretations are based primarily on the Needleandthread/Little Bluestem/Grama Plant Community (this is also considered to be climax). This community evolved with grazing by large herbivores and occasional prairie fire, and can be found on areas that are properly managed with prescribed grazing that allows for proper utilization, changes in season of use, and adequate recovery periods following each grazing event.

The potential vegetation is about 75 percent grasses or grass-like plants, 15 percent forbs, and 10 percent shrubs. An even mix of both warm- and cool-season grasses or grass-likes dominates this plant community. The major grasses or grass-likes include needleandthread, western wheatgrass, threadleaf sedge, little bluestem, and both sideoats and blue grama. Other grasses occurring on the site include thickspike wheatgrass, bluebunch wheatgrass, plains muhly, and prairie Junegrass. The significant forbs include gayfeather, purple coneflower, prairie clover, and cutleaf ironplant. Significant shrubs are fringed sagewort, rose, skunkbush sumac, and yucca. Refer to the plant community composition and group annual production table for species composition and production.

This plant community is well adapted to the Northern Great Plains climatic conditions. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Community dynamics, nutrient cycle, water cycle, and energy flow are functioning at the sites potential. Plant litter is properly distributed with some movement offsite and natural plant mortality is low. The diversity in plant species allows for high drought tolerance.

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

Growth curve number: NE6403

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

Growth curve description: Cool-season, warm-season codominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	25	20	10	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Heavy, continuous season long grazing will convert the plant community to the *Grama/Sedge Plant Community*.

Grama/Sedge Plant Community

This plant community can develop from the adverse effects of heavy, continuous season-long grazing. Short grasses and forbs increase to dominate the site and annual production decreases dramatically. Lack of litter and short plant heights result in higher soil temperatures, poor water infiltration rates, and higher evaporation, which gives blue grama and sedges a competitive advantage over cool- and

warm-season mid-grasses. Blue grama and threadleaf sedge are the dominant grass/grass-like species. Other grasses may include western wheatgrass, needleandthread, little bluestem, prairie Junegrass, and threeawn. Significant forbs include green sagewort, cutleaf ironplant, rush skeletonweed, hairy goldaster, pussytoes, Hood's phlox, and scarlet globemallow. The significant shrubs include broom snakeweed, cactus, and fringed sagewort. Refer to the plant community composition and group annual production table for species composition and production.

This plant community is relatively stable. The competitive advantage of blue grama and threadleaf sedge prevents other species from establishing. This plant community is less productive than the Needleandthread/Little Bluestem/Grama Plant Community. Runoff has increases and infiltration has decreased. Soil erosion does not increase appreciably.

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

Growth curve number: NE6403

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

Growth curve description: Cool-season, warm-season codominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	25	20	10	5	5	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Prescribed grazing will shift this plant community back to the *Needleandthread/Little Bluestem/Grama Plant Community*.

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, in-stream 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 Very Shallow Ecological Site (ES) provides upland grassland cover with an associated forb, shrub, and tree component. It was typically part of 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 the Very Shallow ES remains intact and provides increasingly important habitat for grassland and shrub steppe nesting birds, small rodents, coyotes, and a variety of reptiles, amphibians, and insects. Invasive species such as annual bromegrasses and crested wheatgrass 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.

Needleandthread/Little Bluestem/Grama (HCPC): The predominance of grasses in this community favors herbivores. Insects, such as pollinators, play a role in maintaining the forb community and provide a forage base for grassland birds and other species. The plant structural diversity provides habitat for a wide array of migratory and resident birds. Grasshopper sparrow, chestnut-collared longspur, Sprague's pipit, horned lark, lark bunting, 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, forbs, and shrubs provide high nutrition levels for small and large herbivores including voles, mice, spotted ground squirrel, white- and black-tailed jackrabbit, and deer. The higher 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 habitat for herptiles such as the spade foot toad, gopher snake, milk snake, and prairie rattlesnake.

Grama/Sedge: Resulting from heavy, continuous season-long grazing the warm-season grass component has been substantially reduced and a shift to a short height plant community occurs. Both forb and shrub diversity and abundance are substantially increased.

The predominance of short grass and bare spots makes this site ideal for short grass nesting bird species. The increase grass-like species, forbs, and shrubs cause an increase in insect populations such as pollinators. Grasshopper sparrow, horned lark, lark bunting, 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 provide adequate nutrition levels for small and large herbivores including voles, mice, spotted ground squirrel, and white- and black-tailed jackrabbit. Predators utilizing this plant community include coyote, American badger, red fox, and long-tailed weasel. This plant community provides habitat for herptiles such as the spade foot toad, gopher snake, milk snake, and prairie rattlesnake.

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses & Grass-likes							
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
bluebunch wheatgrass	U P D D	P P P P	U P D D	D D D D	D D D D	U P D D	U P D D
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
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
plains muhly	U U D U	U U D U	U U D U	N N N N	N N N N	U U D U	U U D U
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
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
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
sideoats grama	U D P U	U P D U	U D P U	U P D U	U P D U	U D P U	U D P U
thickspike wheatgrass	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
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
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							
American pasqueflower	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
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
erigonum	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
green sagewort	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
hairy goldaster	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	N N N 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
Indian breadroot	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 U
milkvetch	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 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
prairie smoke	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
purple 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
pussytoes	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
rush skeletonweed	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
scarlet gaura	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
scarlet globemallow	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U D D U
spiny phlox	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U P P U
stemless hymenoxys	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
wild onion	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 D U
Shrubs							
broom snakeweed	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	U U U U
cactus	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
fringed sagewort	U U U U	U U U U	U U U U	U D D U	U P P D	U U U U	U U U D
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
skunkbush sumac	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 U D
yucca	D N N D	D U U D	D N N D	D U U D	D U U D	D N N D	D U U D

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)
Needleandthread/Little Bluestem/Grama	900	0.28
Grama/Sedge	500	0.16

*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

Water is the principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic group B. Infiltration varies from rapid to very rapid and runoff varies from very low to medium depending on soil hydrologic group, slope, and ground cover. In many cases, areas with greater than 75 percent ground cover have the greatest potential for high infiltration and lower runoff. An exception would be where short grasses form a dense sod and dominate the site. Areas where ground cover is less than 50 percent have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting opportunities for upland game species. The wide varieties of plants, which 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

Selected seed harvest of certain unique native plant species can provide additional income.

Supporting Information

Associated Sites

(064XY014NE) – Clayey 14-17" P.Z.
(064XY040NE) – Shallow

(064XY035NE) – Clayey 17-20" P.Z.
(064XY039NE) – Shallow Clay

Similar Sites

(064XY040NE) – Shallow [less needleandthread; more big and little bluestem; higher 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 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