

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Sandy 14-17" P.Z.

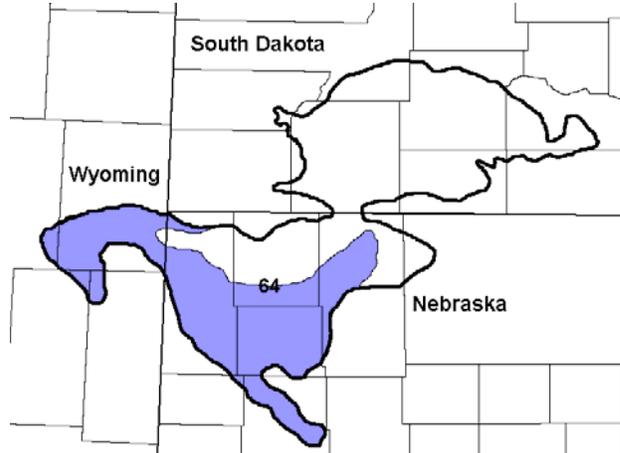
Site ID: R064XY011NE

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

Physiographic Features

This site occurs on nearly level to steeply sloping hillslopes, terraces and alluvial fans.

Landform: hill, stream terrace, alluvial fan



Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2900	4000
Slope (percent):	0	30
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:	Negligible	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 17 inches per year. The normal average annual temperature is about 46° F. January is the coldest month with average temperatures ranging from about 22° F (Keeline 3 W, WY) to about 25° F (Hemingford, NE). July is the warmest month with temperatures averaging from about 70° F (Keeline 3 W, WY) to about 72° F (Hemingford, NE). The range of normal average monthly temperatures between the coldest and warmest months is about 50° F. This large annual range attests to the continental nature of this area's climate. Hourly winds are estimated to average about 11 miles per hour annually, ranging from about 13 miles per hour during the spring to about 10 miles per hour 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 miles per hour.

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. Green up 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	139
Freeze-free period (days):	137	163
Mean Annual Precipitation (inches):	14	17

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.46	0.52	10.0	35.8
February	0.48	0.55	15.1	40.7
March	0.90	1.00	21.0	47.5
April	1.83	1.95	28.9	56.8
May	2.22	3.26	38.3	67.4
June	2.05	2.89	47.3	78.2
July	1.63	2.38	53.9	86.5
August	1.09	1.59	52.3	84.6
September	1.09	1.33	42.4	74.6
October	0.80	1.02	32.6	62.4
November	0.56	0.64	20.4	46.8
December	0.42	0.49	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

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 fine sand to very fine sandy loam textured surface layers and slopes of 0 to 30 percent. The soils in this site are well to somewhat excessively drained and formed in eolian sand, alluvium, colluvium or residuum. The surface layer is 3 to 22 inches thick. The texture of the subsurface soils ranges from sand to very fine sandy loam. 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.

These soils are susceptible to wind and water erosion. The hazard of water erosion increases on slopes greater than about 15 percent. Loss of 50 percent or more of the surface layer of the soils on this site can result in a shift in species composition and/or production.

More information can be found in the various soil survey reports. Contact the local USDA Service Center for soil survey reports that include more detail specific to your location.

Parent Material Kind: eolian deposits, alluvium, colluvium, residuum
Parent Material Origin: sandstone, calcareous, and sedimentary, unspecified
Surface Texture: loamy very fine sand, fine sandy loam, very fine sandy loam
Surface Texture Modifier: none
Subsurface Texture Group: sandy
Surface Fragments $\leq 3''$ (% Cover): 0
Surface Fragments $> 3''$ (%Cover): 0
Subsurface Fragments $\leq 3''$ (% Volume): 0
Subsurface Fragments $> 3''$ (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	somewhat excessively
Permeability Class:	moderate	rapid
Depth (inches):	20	80
Electrical Conductivity (mmhos/cm)*:	0	2
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	5.6	8.4
Soil Reaction (0.1M CaCl₂)*:	NA	NA
Available Water Capacity (inches)*:	3	7
Calcium Carbonate Equivalent (percent)*:	0	10

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

Plant Communities

Ecological Dynamics of the Site:

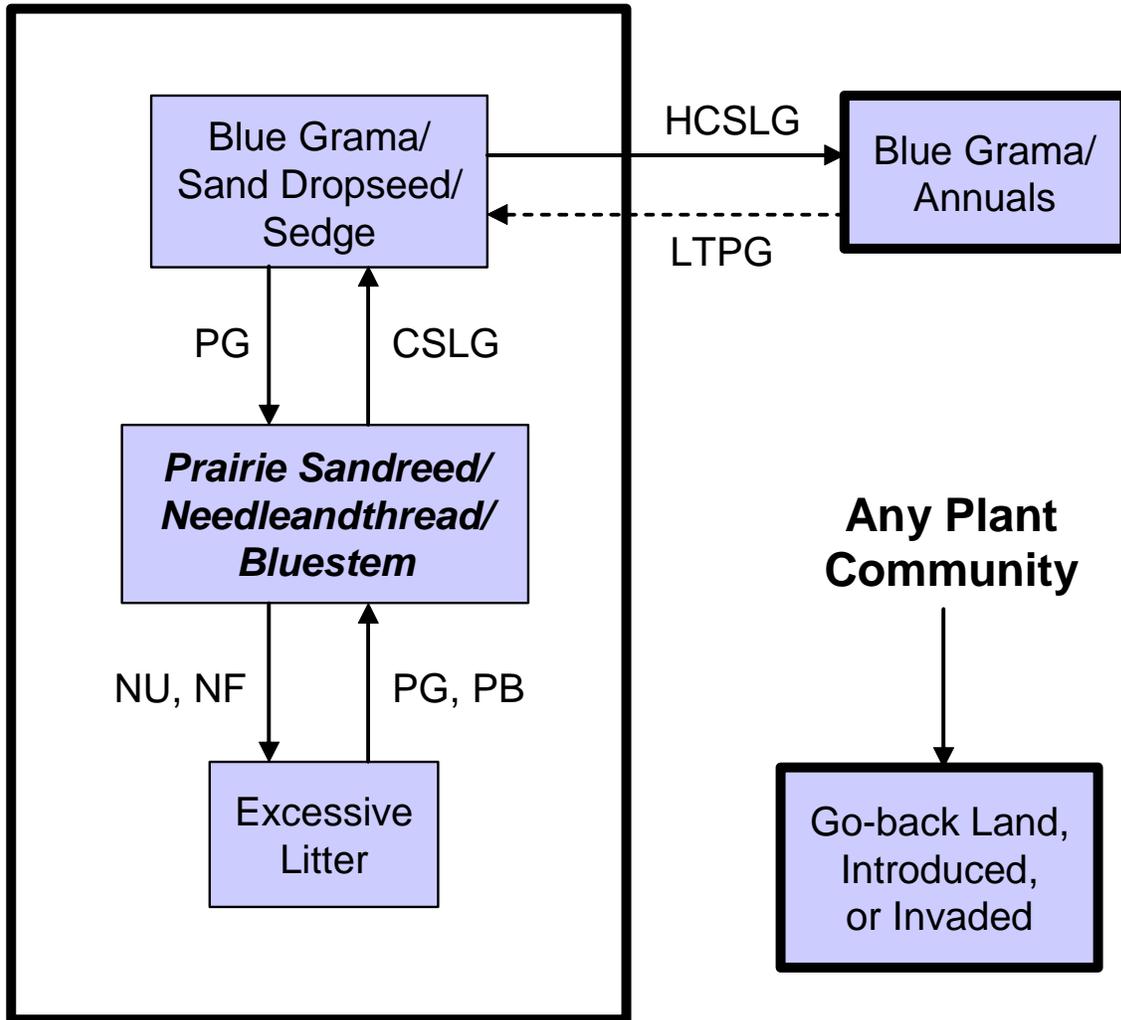
This site developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfire (often of light intensities), and other biotic and abiotic factors that typically influence soil/site development. Changes will occur 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 Prairie Sandreed/Needleandthread/Bluestem Plant Community. Species such as sand dropseed, needleandthread and blue grama will increase, while sand bluestem, prairie sandreed and little bluestem will decrease.

Interpretations are primarily based on the Prairie Sandreed/Needleandthread/Bluestem 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



CSLG - Continuous season-long grazing (grazing a unit for an entire growing season); **HCSLG** - Heavy, continuous season-long grazing; **LTPG** - Long-term prescribed grazing; **NU, NF** - Extended periods of non-use and no fire; **PB** - Prescribed burning; **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	Prairie Sandreed/Needleand-thread/Bluestem			Blue Grama/Sand Dropseed/Sedge			Blue Grama/Annuals			Excessive Litter		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1280 - 1440	80 - 90		630 - 720	70 - 80		300 - 375	60 - 75		880 - 990	80 - 90
TALL & MID WARM-SEASON		1	480 - 880	30 - 55	1	45 - 180	5 - 20	1	0 - 25	0 - 5	1	165 - 440	15 - 40
sand bluestem	ANHA	1	240 - 560	15 - 35	1	45 - 135	5 - 15	1	0 - 25	0 - 5	1	165 - 275	15 - 25
big bluestem	ANGE	1	0 - 160	0 - 10	1	0 - 45	0 - 5	1	0 - 25	0 - 5	1	0 - 110	0 - 10
prairie sandreed	CALO	1	320 - 480	20 - 30	1	0 - 45	0 - 5	1	0 - 0	0 - 0	1	110 - 165	10 - 15
little bluestem	SCSC	1	80 - 160	5 - 10	1	0 - 45	0 - 5	1	0 - 10	0 - 2	1	0 - 55	0 - 5
MID COOL-SEASON		2	80 - 240	5 - 15	2	45 - 180	5 - 20	2	5 - 50	1 - 10	2	55 - 275	5 - 25
needleandthread	HECOC8	2	80 - 160	5 - 10	2	45 - 135	5 - 15	2	5 - 50	1 - 10	2	55 - 220	5 - 20
western wheatgrass	PASM	2	0 - 80	0 - 5	2	9 - 135	1 - 15	2	0 - 25	0 - 5	2	0 - 55	0 - 5
SHORT WARM-SEASON		3	80 - 160	5 - 10	3	90 - 180	10 - 20	3	75 - 150	15 - 30	3	22 - 88	2 - 8
blue grama	BOGR2	3	80 - 160	5 - 10	3	90 - 180	10 - 20	3	75 - 150	15 - 30	3	22 - 88	2 - 8
NATIVE GRASSES & GRASS-LIKES		4	16 - 240	1 - 15	4	90 - 180	10 - 20	4	50 - 150	10 - 30	4	55 - 220	5 - 20
switchgrass	PAV12	4	0 - 160	0 - 10	4	0 - 9	0 - 1				4	0 - 55	0 - 5
sand dropseed	SPCR	4	0 - 80	0 - 5	4	45 - 135	5 - 15	4	25 - 100	5 - 20	4	0 - 55	0 - 5
sand lovegrass	ERTR3	4	0 - 80	0 - 5	4	0 - 9	0 - 1				4	0 - 11	0 - 1
sandhill muhly	MUPU2				4	0 - 9	0 - 1	4	0 - 10	0 - 2	4	0 - 11	0 - 1
Indian ricegrass	ACHY	4	0 - 32	0 - 2	4	0 - 18	0 - 2				4	0 - 33	0 - 3
prairie junegrass	KOMA	4	0 - 32	0 - 2	4	0 - 45	0 - 5	4	0 - 25	0 - 5	4	0 - 33	0 - 3
sedge	CAREX	4	0 - 80	0 - 5	4	45 - 135	5 - 15	4	25 - 50	5 - 10	4	22 - 88	2 - 8
threawn	ARIST				4	0 - 45	0 - 5	4	0 - 75	0 - 15	4	0 - 11	0 - 1
other perennial grasses	2GP	4	0 - 32	0 - 2	4	0 - 18	0 - 2	4	0 - 10	0 - 2	4	0 - 22	0 - 2
NON-NATIVE GRASSES		5			5	0 - 90	0 - 10	5	5 - 100	1 - 20	5	0 - 110	0 - 10
cheatgrass	BRTE				5	0 - 90	0 - 10	5	5 - 100	1 - 20	5	0 - 110	0 - 10
FORBS		6	80 - 160	5 - 10	6	45 - 135	5 - 15	6	50 - 100	10 - 20	6	55 - 110	5 - 10
annual sunflower	HEAN3	6	0 - 16	0 - 1	6	0 - 27	0 - 3	6	0 - 15	0 - 3	6	0 - 55	0 - 5
cutweed sagewort	ARLU	6	0 - 16	0 - 1	6	0 - 27	0 - 3	6	0 - 25	0 - 5	6	0 - 11	0 - 1
curlycup gumweed	GRSQ				6	0 - 18	0 - 2	6	0 - 25	0 - 5	6	0 - 0	0 - 0
gayfeather	LIATR	6	0 - 16	0 - 1	6	0 - 9	0 - 1	6	0 - 5	0 - 1	6	0 - 0	0 - 0
green sagewort	ARDR4	6	0 - 16	0 - 1	6	0 - 27	0 - 3	6	0 - 25	0 - 5	6	0 - 22	0 - 2
hairy goldaster	HEVI4	6	0 - 16	0 - 1	6	0 - 18	0 - 2	6	0 - 25	0 - 5	6	0 - 22	0 - 2
heath aster	SYER	6	0 - 16	0 - 1	6	0 - 45	0 - 5	6	0 - 25	0 - 5	6	0 - 0	0 - 0
penstemon	PENST	6	0 - 32	0 - 2	6	0 - 9	0 - 1	6	0 - 5	0 - 1	6	0 - 0	0 - 0
prairie coneflower	RACO3	6	0 - 32	0 - 2	6	0 - 9	0 - 1	6	0 - 0	0 - 0	6	0 - 11	0 - 1
rocky mountain beeplant	CLSE				6	0 - 18	0 - 2	6	0 - 25	0 - 5	6	0 - 0	0 - 0
rush skeletonweed	LYJU	6	0 - 16	0 - 1	6	0 - 9	0 - 1	6	0 - 5	0 - 1	6	0 - 11	0 - 1
scurfspea	PSORA2	6	0 - 32	0 - 2	6	0 - 45	0 - 5	6	0 - 25	0 - 5	6	0 - 11	0 - 1
spiderwort	TRADE	6	0 - 32	0 - 2	6	0 - 9	0 - 1	6	0 - 5	0 - 1	6	0 - 0	0 - 0
stiff sunflower	HEPA19	6	0 - 16	0 - 1	6	0 - 9	0 - 1	6	0 - 0	0 - 0	6	0 - 0	0 - 0
tenpetal mentzelia	MEDE2	6	0 - 16	0 - 1	6	0 - 27	0 - 3	6	0 - 25	0 - 5	6	0 - 44	0 - 4
texas croton	CRTE4	6	0 - 16	0 - 1	6	0 - 18	0 - 2	6	0 - 10	0 - 2	6	0 - 11	0 - 1
thistle	CIRSI	6	0 - 16	0 - 1	6	0 - 18	0 - 2	6	0 - 25	0 - 5	6	0 - 11	0 - 1
verbena	VERBE	6	0 - 16	0 - 1	6	0 - 45	0 - 5	6	0 - 25	0 - 5	6	0 - 11	0 - 1
western ragweed	AMPS	6	0 - 32	0 - 2	6	0 - 90	0 - 10	6	0 - 50	0 - 10	6	0 - 22	0 - 2
other perennial forbs	2FP	6	0 - 16	0 - 1	6	0 - 9	0 - 1	6	0 - 5	0 - 1	6	0 - 11	0 - 1
other annual forbs	2FA	6	0 - 16	0 - 1	6	0 - 9	0 - 1	6	0 - 25	0 - 5	6	0 - 11	0 - 1
SHRUBS		7	16 - 160	1 - 10	7	45 - 135	5 - 15	7	25 - 100	5 - 20	7	11 - 110	1 - 10
broom snakeweed	GUSA2	7	0 - 16	0 - 1	7	0 - 45	0 - 5	7	0 - 50	0 - 10	7	0 - 11	0 - 1
cactus	OPUNT	7	0 - 32	0 - 2	7	0 - 45	0 - 5	7	0 - 75	0 - 15	7	0 - 22	0 - 2
fringed sagewort	ARFR4	7	0 - 80	0 - 5	7	0 - 45	0 - 5	7	0 - 50	0 - 10	7	0 - 22	0 - 2
rose	ROSA5	7	0 - 80	0 - 5	7	0 - 9	0 - 1	7	0 - 5	0 - 1	7	0 - 55	0 - 5
sand sagebrush	ARFI2	7	0 - 80	0 - 5	7	0 - 45	0 - 5	7	0 - 10	0 - 2	7	0 - 22	0 - 2
small soapweed	YUGL	7	0 - 32	0 - 2	7	0 - 18	0 - 2	7	0 - 25	0 - 5	7	0 - 11	0 - 1
other shrubs	2SHRUB	7	0 - 32	0 - 2	7	0 - 18	0 - 2	7	0 - 10	0 - 2	7	0 - 11	0 - 1
Annual Production lbs./acre			LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH
GRASSES & GRASS-LIKES			910 - 1392 - 1670		420 - 720 - 920		235 - 363 - 590		645 - 957 - 1270				
FORBS			75 - 120 - 165		40 - 90 - 140		45 - 75 - 105		50 - 83 - 115				
SHRUBS			15 - 88 - 165		40 - 90 - 140		20 - 63 - 105		5 - 61 - 115				
TOTAL			1000 - 1600 - 2000		500 - 900 - 1200		300 - 500 - 800		700 - 1100 - 1500				

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 are 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 (DPC’s) 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.

Prairie Sandreed/Needleandthread/Bluestem Plant Community

Interpretations are based primarily on the Prairie Sandreed/Needleandthread/Bluestem Plant Community (this is also considered to be climax). This site can be found on areas that are properly managed with grazing and/or prescribed burning, and on areas receiving occasional short periods of rest. The potential vegetation is about 80% grasses or grass-like, 10% forbs, and 10% shrubs. The site is dominated by mid and tall grasses. The major grasses are sand or big bluestem, prairie sandreed and needleandthread. Other grass and grass-like species occurring on the site are little bluestem, blue grama, and threadleaf sedge. Significant forbs include dotted gayfeather, penstemon and prairie coneflower. Shrubs in this community are rose, sand sagebrush and fringed sagewort.

This plant community is well adapted to the Northern Great Plains climatic conditions. Community dynamics, nutrient cycle, water cycle and energy flow are functioning at the sites potential. Plant litter is properly distributed with some movement off-site and natural plant mortality is low. The high plant diversity allows for high drought tolerance.

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: NE6404

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

Growth curve description: Warm-season dominant, cool-season sub-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	15	24	23	15	5	5	0	0

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

- Non-use and no fire will convert this plant community to the *Excessive Litter Plant Community*.
- Continuous season-long grazing during the growing season will move this plant community to the *Blue Grama/Sand Dropseed/Sedge Plant Community*.

Blue Grama/Sand Dropseed/Sedge Plant Community

This plant community typically develops under continuous season-long grazing over a period of several years. It is made up of short, grazing tolerant species. This plant community is made up of about 70% grasses and grass-like, 15% forbs and 15% shrubs. The dominant species are blue grama, sand dropseed, sedge, needleandthread and sand bluestem. Dominant forbs include western ragweed, scurfpea, heath aster and verbena. Dominant shrubs are broom snakeweed, cactus, sand sagebrush and fringed sagewort. Compared to the Prairie Sandreed/Needleandthread/Bluestem Plant Community, blue grama and sand dropseed have increased creating sod bound conditions. Plant diversity is moderate.

This plant community is fairly resistant to change. Soil erosion is low. The water cycle is altered because of the lack of surface litter. Infiltration is moderate due to soil texture, which can help to reduce runoff, but off-site gully erosion can be a concern.

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: NE6404

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

Growth curve description: Warm-season dominant, cool-season sub-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	15	24	23	15	5	5	0	0

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

- Prescribed grazing will convert this plant community to the *Prairie Sandreed/Needleandthread/Bluestem Plant Community*.
- Heavy, continuous season-long grazing will convert this plant community to the *Blue Grama/Annuals Plant Community*.

Blue Grama/Annuals Plant Community

This plant community develops where the rangeland is grazed year-round, at high stock densities and/or occupation by prairie dogs. The plant composition is made up of annuals with a few species of perennial forbs and grasses that are tolerant to frequent and severe defoliation. Dominant species are blue grama, sand dropseed and threeawn. Most of the mid-grasses have been eliminated or severely reduced. Cheatgrass has invaded the site. Perennial forbs are curlycup gumweed, western ragweed, and hairy goldaster. Broom snakeweed, fringed sagewort and cactus can be abundant.

This plant community is resistant to change due to the lack of perennial species present and the amount of annuals and invaders occupying the site. Soil erosion is high compared to the Prairie Sandreed/Needleandthread/Bluestem Plant Community due to the increased bare ground. Infiltration is low and runoff is high from the lack of litter and viable plant population.

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: NE6404

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

Growth curve description: Cool-season, warm-season co-dominant.

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

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

- Long-term prescribed grazing may move this plant community back towards the *Blue Grama/Sand Dropseed/Sedge Plant Community*. The rate of this transition can be extremely variable depending on the species present on the site and the availability of a seed source. Range or pasture planting may be the only option to return this site to a productive condition in a realistic time frame.

Excessive Litter Plant Community

This plant community developed under the absence of grazing and/or fire. At first, excessive litter builds up shading out some plants. Other plants become decadent with low vigor, thus creating greater interspaces between plants. Bunch grasses often develop dead centers, and rhizomatous grasses form small colonies due to the lack of tiller stimulation. Dominant forbs include annual sunflower and tenpetal mentzelia. Rose is the dominant shrub, while the remaining shrubs decrease in abundance.

Compared to the Prairie Sandreed/Needleandthread/Bluestem Plant Community, weedy species, cool-season grasses, and sedges have increased. Blue grama has decreased. Rodent disturbance has resulted in an increase of soil disturbance. Noxious weeds such as Canada thistle or leafy spurge may invade the site. Plant diversity is moderate to high.

This plant community is not resistant to change. The introduction of grazing and/or fire quickly changes the plant community. It is somewhat more vulnerable to severe disturbance than the Prairie Sandreed/Needleandthread/Bluestem Plant Community. Soil erosion can be accelerated due to increased interspaces between plants. Water flow patterns and pedestaling becomes obvious. Infiltration is high and runoff can increase as plant litter declines.

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: NE6403

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

Growth curve description: Cool-season, warm-season co-dominant.

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

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

- Prescribed grazing and/or fire will move this plant community to the *Prairie Sandreed/Needleandthread/Bluestem Plant Community*.

Go-back Land, Introduced, or Invaded

This group includes three separate vegetation states that are highly variable in nature. They are derived through three distinct management scenarios, and are not related successional. Infiltration, runoff and soil erosion varies depending on the vegetation present on the site.

The **Go-back Land** state can be reached whenever severe mechanical disturbance (i.e., abandoned farmland) occurs. During the early successional stages, the species that mainly dominate are annual grasses and forbs, later being replaced by both native and introduced perennials. The vegetation on this site varies greatly, sometimes being dominated by three-awn, dropseed, annual brome, crested wheatgrass, buffalograss, broom snakeweed, sweetclover and non-native thistles. Other plants that commonly occur on the site include deathcamas, prickly lettuce, marestalk, kochia, foxtail and annual sunflower.

The **Introduced** state is normally those areas seeded to crested wheatgrass, pubescent, intermediate wheatgrass and alfalfa, or other introduced species. It may require considerable investment. Refer to the associated Forage Suitability Group description for adapted species.

The **Invaded** state includes areas that have been invaded by species such as smooth brome, Kentucky bluegrass, non-native thistles, field bindweed, knapweeds, leafy spurge, hoary cress and other introduced species.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Prairie Sandreed/Needleandthread/Bluestem Plant Community:

Blue Grama/Sand Dropseed/Sedge Plant Community:

Blue Grama/Annuals Plant Community:

Excessive Litter Plant Community:

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses & Grass-likes							
big bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
blue grama	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
Indian ricegrass	D P U D	N P N D	D P U D	N P N D	N P N D	D P U D	D P U 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
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
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							
annual sunflower	U U D U	U D U U	U U D U	U D U U	U D U U	U U D U	U D U U
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
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
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
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
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
scurfpea	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
spiderwort	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
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
tenpetal mentzelia	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
texas croton	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
thistle	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
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							
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
sand sagebrush	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U
small soapweed	D 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 ecological site 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)
Prairie Sandreed/Needleandthread/Bluestem	1600	0.51
Blue Grama/Sand Dropseed/Sedge	900	0.28
Blue Grama/Annuals	500	0.16
Excessive Litter	1100	0.35

* Based on 790 lbs./acre (air-dry weight) per Animal Unit Month (AUM), and on 25% 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 forage production on this site. This site is dominated by soils in hydrologic group B, with localized areas in group A. Infiltration ranges from high to very high. Runoff potential for this site varies from very low to low depending on soil hydrologic group, slope and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook).

Recreational Uses

This site provides hunting opportunities for upland game species. The wide variety 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

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

Supporting Information

Associated Sites

(064XY012NE) – Sands (064XY029NE) – Sandy Lowland (064XY024NE) – Subirrigated

Similar Sites

(064XY012NE) – Sands [more sand bluestem; rolling topography]

(064XY029NE) – Sandy Lowland [more switchgrass; higher production]

(064XY032NE) – Sandy 17-20" P.Z. [more 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, NRCS; Jill Epley, Range Management Specialist, NRCS; Rick Peterson, Range Management Specialist, NRCS; David Steffen, Range Management Specialist, NRCS; Jeff Vander Wilt, Range Management Specialist, NRCS; 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	2	1978 – 1978	NE	Box Butte

State Correlation

This site has been correlated with Nebraska and Wyoming in MLRA 64.

Field Offices/Counties

Alliance, NE	Box Butte	Douglas, WY	Converse	Scottsbluff, NE	Scottsbluff
Bridgeport, NE	Morrill	Lusk, WY	Niobrara	Torrington, WY	Goshen
Chadron, NE	Dawes/Sioux	Rushville, NE	Sheridan	Wheatland, WY	Platte

Relationship to Other Established Classifications

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

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. 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