

United States Department of Agriculture Natural Resources Conservation Service

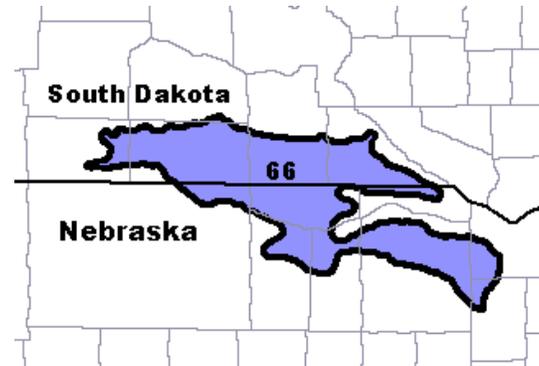
Ecological Site Description

Site Type: Rangeland

Site Name: Subirrigated

Site ID: R066XY046NE

Major Land Resource Area:
66 – Dakota-Nebraska Eroded Tablelands



Physiographic Features

This site occurs on level to nearly level areas of interdunes and along floodplains and drainageways that have soil water moderately close to the ground surface. Where this site occurs on interdunes, it is not subject to flooding. This site receives runoff from areas higher on the landscape.

Landform: interdune, floodplain, drainageway **Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1900	3000
Slope (percent):	0	2
Water Table Depth (inches):	18	36
Flooding:		
Frequency:	None	Occasional
Duration:	None	Brief
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Very low	Low

Climatic Features

MLRA 66 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 the winds move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 18 to 25 inches per year. The normal average annual temperature is about 48° F. January is the coldest month with average temperatures ranging from about 19° F (Bonesteel, SD) to about 23° F (Ainsworth, NE). July is the warmest month with temperatures averaging from about 73° F (Harrington, SD) to about 75° F (Gregory, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 54° F. This large annual range attests to the continental nature of this area's climate.

Hourly winds average about 10 miles per hour annually, ranging from about 11 miles per hour during the spring to about 9 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 native cool season plants begins mid to late March and continues to late June. Native warm season plants begin growth in early May and continue to late August. 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):	127	154
Freeze-free period (days):	144	173
Mean Annual Precipitation (inches):	18	25

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.28	0.42	8.2	33.6
February	0.48	0.69	13.5	38.9
March	0.92	1.58	21.3	46.9
April	1.94	3.03	31.7	61.2
May	3.08	4.20	42.8	72.5
June	3.10	3.74	52.6	82.2
July	2.86	3.25	58.5	88.3
August	2.33	2.68	56.2	86.8
September	1.54	2.71	45.9	77.3
October	1.03	1.79	33.7	65.0
November	0.55	0.94	20.8	47.6
December	0.32	0.45	11.2	37.1

Climate Stations		Period	
Station ID	Location or Name	From	To
NE0050	Ainsworth	1948	2003
SD0778	Bonesteel	1956	2003
NE1365	Butte	1948	2003
SD3574	Harrington	1960	2003
NE8760	Valentine WSO AP	1948	2003

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

Influencing Water Features

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

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

Representative Soil Features

The features common to all soils in this site are the fine sand and loamy textured surface soils and slopes of 0 to 2 percent. The soils in this site are somewhat poorly drained and formed in eolian sand

and/or sandy alluvium. The surface layer is 3 to 10 inches thick. The texture of the subsurface ranges from loam to fine sand.

Runoff as evidenced by patterns of rill, gully or other water flow is negligible due to the low slope gradient and high intake rate of these soils. Some pedestalling of plants occurs, but it is not very evident on casual observation and occurs on less than 5% of the plants. 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: alluvium

Parent Material Origin: mixed

Surface Texture: loam, fine sandy loam, fine sand

Surface Texture Modifier: none

Subsurface Texture Group: sandy

Surface Fragments \leq 3" (% Cover): 0-10

Surface Fragments $>$ 3" (%Cover): 0

Subsurface Fragments \leq 3" (% Volume): 0-10

Subsurface Fragments $>$ 3" (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	somewhat poorly	somewhat poorly
Permeability Class:	moderately slow	rapid
Depth (inches):	80	80
Electrical Conductivity (mmhos/cm)*:	0	8
Sodium Absorption Ratio*:	0	6
Soil Reaction (1:1 Water)*:	5.6	9.0
Soil Reaction (0.1M CaCl₂)*:	NA	NA
Available Water Capacity (inches)*:	3	8
Calcium Carbonate Equivalent (percent)*:	0	40

* 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.

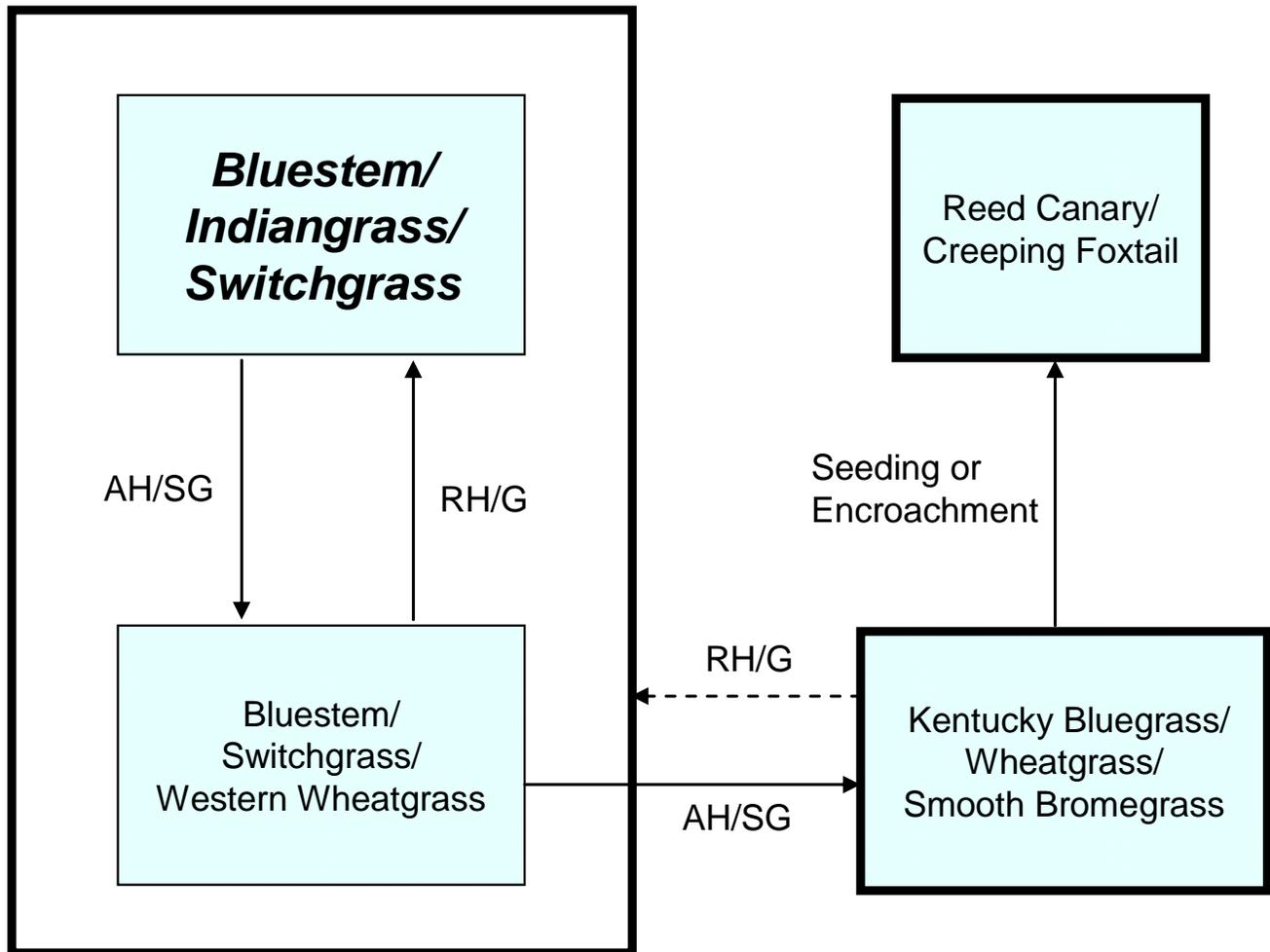
As this site deteriorates, species such as redtop, Kentucky bluegrass, slender wheatgrass and smooth brome grass will increase. Warm-season grasses such as Indiangrass and big bluestem will decrease in frequency and production. Light grazing and the absence of haying allows woody plant encroachment such as cottonwood into any of the plant communities described below.

Interpretations are primarily based on the Bluestem/Indiangrass/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. Subclimax 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/SG – Annual haying/summer grazing; **RH/G** – Rotational haying/grazing.

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Bluestem/Indiangrass/Switchgrass		
			Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES				4080 - 4560	85 - 95
TALL WARM-SEASON GRASSES			1	1680 - 2640	35 - 55
big bluestem	Andropogon gerardii	ANGE	1	960 - 1920	20 - 40
Indiangrass	Sorghastrum nutans	SONU2	1	480 - 960	10 - 20
switchgrass	Panicum virgatum	PAV2	1	240 - 720	5 - 15
prairie cordgrass	Spartina pectinata	SPPE	1	0 - 480	0 - 10
green muhly	Muhlenbergia racemosa	MURA	1	0 - 240	0 - 5
MID WARM-SEASON GRASSES			2	480 - 1200	10 - 25
little bluestem	Schizachyrium scoparium	SCSC	2	480 - 960	10 - 20
sideoats grama	Bouteloua curtipendula	BOCU	2	96 - 480	2 - 10
purple lovegrass	Eragrostis spectabilis	ERSP	2	0 - 240	0 - 5
RHIZOMATOUS COOL-SEASON GRASSES			3	96 - 384	2 - 8
western wheatgrass	Pascopyrum smithii	PASM	3	48 - 240	1 - 5
slender wheatgrass	Elymus trachycaulus	ELTR7	3	0 - 240	0 - 5
prairie wedgescale	Sphenopholis obtusata	SPOB	3	0 - 144	0 - 3
plains bluegrass	Poa arida	POAR3	3	0 - 144	0 - 3
COOL-SEASON BUNCH GRASSES			4	48 - 240	1 - 5
Canada wildrye	Elymus canadensis	ELCA4	4	48 - 240	1 - 5
porcupine grass	Hesperostipa spartea	HESP11	4	0 - 240	0 - 5
needleandthread	Hesperostipa comata ssp. comata	HECOC8	4	0 - 240	0 - 5
foxtail barley	Hordeum jubatum	HOJU	4	0 - 144	0 - 3
OTHER NATIVE GRASSES			5	0 - 144	0 - 3
reed canarygrass	Phalaris arundinacea	PHAR3	5	0 - 144	0 - 3
other perennial grasses		2GP	5	0 - 144	0 - 3
GRASS-LIKES			6	96 - 480	2 - 10
Sartwell's sedge	Carex sartwellii	CASA8	6	48 - 336	1 - 7
awlfuit sedge	Carex stipata	CAST5	6	0 - 240	0 - 5
upright sedge	Carex stricta	CAST8	6	0 - 240	0 - 5
sedge	Carex spp.	CAREX	6	48 - 336	1 - 7
bulrush	Schoenoplectus spp.	SCHOE6	6	0 - 240	0 - 5
rush	Juncus spp.	JUNCU	6	0 - 240	0 - 5
spikerush	Eleocharis spp.	ELEOC	6	0 - 144	0 - 3
other grass-likes		2GL	6	0 - 240	0 - 5
FORBS			8	240 - 480	5 - 10
American licorice	Glycyrrhiza lepidota	GLLE3	8	48 - 144	1 - 3
black-eyed Susan	Rudbeckia hirta	RUH2	8	0 - 96	0 - 2
blue verberna	Verbena hastata	VEHA2	8	0 - 48	0 - 1
cinquefoil	Potentilla spp.	POTEN	8	48 - 144	1 - 3
cudweed sagewort	Artemisia ludoviciana	ARLU	8	48 - 144	1 - 3
false boneset	Brickellia eupatorioides	BREU	8	0 - 96	0 - 2
giant goldenrod	Solidago gigantea	SOGI	8	0 - 144	0 - 3
groundsel	Senecio spp.	SENEC	8	0 - 48	0 - 1
heath aster	Symphyotrichum ericoides	SYER	8	48 - 96	1 - 2
horsetail	Equisetum laevigatum	EQLA	8	0 - 48	0 - 1
Illinois bundleflower	Desmanthus illinoensis	DEIL	8	0 - 96	0 - 2
Maximilian sunflower	Helianthus maximiliani	HEMA2	8	48 - 144	1 - 3
Missouri goldenrod	Solidago missouriensis	SOMI2	8	0 - 96	0 - 2
Pennsylvania smartweed	Polygonum pennsylvanicum	POPE2	8	0 - 96	0 - 2
prairie coneflower	Ratibida columnifera	RACO3	8	0 - 96	0 - 2
prairie onion	Allium stellatum	ALST	8	0 - 96	0 - 2
purple prairie clover	Dalea purpurea	DAPU5	8	48 - 96	1 - 2
showy milkweed	Asclepias speciosa	ASSP	8	48 - 96	1 - 2
stiff goldenrod	Oligoneuron rigidum	OLRI	8	48 - 96	1 - 2
stiff sunflower	Helianthus pauciflorus	HEPA19	8	0 - 144	0 - 3
tall gayfeather	Liatris aspera	LIAS	8	48 - 96	1 - 2
western dock	Rumex aquaticus	RUAQ	8	0 - 96	0 - 2
western ragweed	Ambrosia psilostachya	AMPS	8	48 - 96	1 - 2
western yarrow	Achillea millefolium var. occidentalis	ACMIO	8	48 - 96	1 - 2
white prairie clover	Dalea candida	DACA7	8	0 - 96	0 - 2
wild strawberry	Fragaria virginiana	FRVI	8	0 - 48	0 - 1
native forbs		2FN	8	48 - 240	1 - 5
SHRUBS			9	0 - 240	0 - 5
leadplant	Amorpha canescens	AMCA6	9	0 - 144	0 - 3
poison ivy	Toxicodendron rydbergii	TORY	9	0 - 48	0 - 1
rose	Rosa spp.	ROSA5	9	0 - 144	0 - 3
western snowberry	Symphoricarpos occidentalis	SYOC	9	0 - 144	0 - 3
willow	Salix spp.	SALIX	9	0 - 144	0 - 3
other shrubs		2SHRUB	9	0 - 144	0 - 3

Annual Production lbs./acre	LOW	RV	HIGH
GRASSES & GRASS-LIKES	3280	4320	5400
FORBS	220	360	550
SHRUBS	0	120	250
TOTAL	3500	4800	6200

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value.

Plant Community Composition and Group Annual Production

COMMON/GRUP NAME	SYMBOL	Bluestem/Indiangrass/ Switchgrass			Bluestem/Switchgrass/ Western Wheatgrass			Kentucky Bluegrass/Wheatgrass/ Smooth Bromegrass					
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp			
GRASSES & GRASS-LIKES													
TALL WARM-SEASON GRASSES													
big bluestem	ANGE	1	960 - 1920	20 - 40	1	215 - 645	5 - 15	1	0 - 150	0 - 3			
Indiangrass	SONU2	1	480 - 960	10 - 20	1	0 - 129	0 - 3						
switchgrass	PAV12	1	240 - 720	5 - 15	1	430 - 860	10 - 20	1	0 - 250	0 - 5			
prairie cordgrass	SPPE	1	0 - 480	0 - 10	1	0 - 86	0 - 2						
green muhly	MURA	1	0 - 240	0 - 5									
MD WARM-SEASON GRASSES													
little bluestem	SCSC	2	480 - 960	10 - 20	2	86 - 430	2 - 10	2	0 - 150	0 - 3			
sideoats grama	BOCU	2	96 - 480	2 - 10	2	0 - 215	0 - 5						
purple lovegrass	ERSP	2	0 - 240	0 - 5	2	43 - 344	1 - 8	2	0 - 250	0 - 5			
RHIZOMATOUS COOL-SEASON													
western wheatgrass	PASM	3	96 - 384	2 - 8	3	215 - 645	5 - 15	3	750 - 1500	15 - 30			
slender wheatgrass	ELTR7	3	0 - 240	0 - 5	3	0 - 430	0 - 10	3	100 - 750	2 - 15			
prairie wedgescale	SPOB	3	0 - 144	0 - 3	3	0 - 86	0 - 2	3	0 - 100	0 - 2			
plains bluegrass	POAR3	3	0 - 144	0 - 3	3	0 - 215	0 - 5	3	0 - 500	0 - 10			
COOL-SEASON BUNCH GRASSES													
Canada wildrye	ELCA4	4	48 - 240	1 - 5									
porcupine grass	HESP11	4	0 - 240	0 - 5	4	86 - 430	2 - 10						
needlethread	HECOB8	4	0 - 240	0 - 5	4	86 - 430	2 - 10	4	0 - 250	0 - 5			
foxtail barley	HOJU	4	0 - 144	0 - 3	4	43 - 215	1 - 5	4	50 - 250	1 - 5			
OTHER NATIVE GRASSES													
reed canarygrass	PHAR3	5	0 - 144	0 - 3	5	0 - 215	0 - 5	5	0 - 400	0 - 8			
other perennial grasses	ZGP	5	0 - 144	0 - 3	5	0 - 215	0 - 5	5	0 - 250	0 - 5			
GRASS-LIKES													
Sartwell's sedge	CASA8	6	48 - 336	1 - 7	6	86 - 430	2 - 10	6	50 - 350	1 - 7			
awlfuit sedge	CAST5	6	0 - 240	0 - 5	6	0 - 301	0 - 7	6	0 - 250	0 - 5			
upright sedge	CAST8	6	0 - 240	0 - 5	6	0 - 301	0 - 7	6	0 - 250	0 - 5			
sedge	CAREX	6	48 - 336	1 - 7	6	86 - 430	2 - 10	6	50 - 350	1 - 7			
bulrush	SCHOE6	6	0 - 240	0 - 5	6	0 - 215	0 - 5	6	0 - 250	0 - 5			
rush	JUNCU	6	0 - 240	0 - 5	6	43 - 344	1 - 8	6	100 - 500	2 - 10			
spikerush	ELEOC	6	0 - 144	0 - 3	6	43 - 215	1 - 5	6	50 - 350	1 - 7			
other grass-likes	ZGL	6	0 - 240	0 - 5	6	0 - 430	0 - 10	6	0 - 350	0 - 7			
NON-NATIVE GRASSES													
common timothy	PHPR3	7			7	215 - 645	5 - 15	7	1000 - 2000	20 - 40			
Kentucky bluegrass	POPR	7				86 - 645	2 - 15	7	750 - 1750	15 - 35			
redtop	AGST2	7				0 - 215	0 - 5	7	50 - 750	1 - 15			
reed canarygrass	PHAR3	7				0 - 86	0 - 2	7	0 - 250	0 - 5			
smooth bromegrass	BRIN2	7				43 - 215	1 - 5	7	100 - 1000	2 - 20			
FORBS													
American licorice	GLLE3	8	48 - 144	1 - 3	8	43 - 172	1 - 4	8	0 - 100	0 - 2			
black-eyed Susan	RUH12	8	0 - 96	0 - 2									
blue verbena	VEHA2	8	0 - 48	0 - 1	8	0 - 86	0 - 2	8	0 - 150	0 - 3			
cinquefoil	POTEN	8	48 - 144	1 - 3	8	43 - 129	1 - 3	8	0 - 50	0 - 1			
common dandelion	TAOF					0 - 129	0 - 3	8	100 - 250	2 - 5			
cutweed sagewort	ARLU	8	48 - 144	1 - 3	8	43 - 215	1 - 5	8	50 - 250	1 - 5			
curly dock	RUCR					0 - 129	0 - 3	8	50 - 250	1 - 5			
false boneset	BREU	8	0 - 96	0 - 2	8	0 - 43	0 - 1						
giant goldenrod	SOGI	8	0 - 144	0 - 3	8	0 - 129	0 - 3	8	0 - 50	0 - 1			
groundsel	SENEC	8	0 - 48	0 - 1	8	0 - 43	0 - 1						
heath aster	SYER	8	48 - 96	1 - 2	8	43 - 129	1 - 3	8	50 - 150	1 - 3			
horsetail	EGLA	8	0 - 48	0 - 1	8	0 - 86	0 - 2	8	0 - 50	0 - 1			
Illinois bundleflower	DEIL	8	0 - 96	0 - 2									
Maximilian sunflower	HEMA2	8	48 - 144	1 - 3	8	0 - 43	0 - 1						
Missouri goldenrod	SOMI2	8	0 - 96	0 - 2	8	0 - 86	0 - 2	8	0 - 100	0 - 2			
Pennsylvania smartweed	POPE2	8	0 - 96	0 - 2	8	0 - 86	0 - 2						
prairie coneflower	RACO3	8	0 - 96	0 - 2	8	0 - 86	0 - 2						
prairie onion	ALST	8	0 - 96	0 - 2	8	0 - 86	0 - 2						
purple prairie clover	DAPU5	8	48 - 96	1 - 2	8	0 - 43	0 - 1						
red clover	TRPR2					0 - 86	0 - 2	8	50 - 200	1 - 4			
snowy milkweed	ASSP	8	48 - 96	1 - 2	8	43 - 86	1 - 2						
stiff goldenrod	OLRI	8	48 - 96	1 - 2	8	43 - 129	1 - 3	8	0 - 50	0 - 1			
stiff sunflower	HEPA19	8	0 - 144	0 - 3									
tall gayfeather	LIAS	8	48 - 96	1 - 2	8	43 - 86	1 - 2						
western dock	RUAQ	8	0 - 96	0 - 2	8	0 - 86	0 - 2						
western ragweed	AMPS	8	48 - 96	1 - 2	8	43 - 172	1 - 4	8	50 - 250	1 - 5			
western salsify	TRDU					43 - 129	1 - 3	8	50 - 250	1 - 5			
western yarrow	ACMIO	8	48 - 96	1 - 2	8	43 - 129	1 - 3	8	50 - 250	1 - 5			
white clover	TRRE3					0 - 86	0 - 2	8	50 - 200	1 - 4			
white prairie clover	DACA7	8	0 - 96	0 - 2	8	0 - 43	0 - 1						
wild strawberry	FRVI	8	0 - 48	0 - 1	8	0 - 43	0 - 1						
native forbs	2FN	8	48 - 240	1 - 5	8	43 - 215	1 - 5	8	50 - 150	1 - 3			
introduced forbs	2FI					43 - 215	1 - 5	8	50 - 400	1 - 8			
SHRUBS													
leadplant	AMCA6	9	0 - 144	0 - 3	9	0 - 43	0 - 1						
poison ivy	TORY	9	0 - 48	0 - 1	9	0 - 86	0 - 2	9	0 - 50	0 - 1			
rose	ROSA5	9	0 - 144	0 - 3	9	0 - 129	0 - 3	9	0 - 50	0 - 1			
western snowberry	SYOC	9	0 - 144	0 - 3	9	0 - 215	0 - 5	9	0 - 150	0 - 3			
willow	SALX	9	0 - 144	0 - 3	9	0 - 43	0 - 1						
other shrubs	2SHRUB	9	0 - 144	0 - 3	9	0 - 129	0 - 3	9	0 - 100	0 - 2			
TREES													
cottonwood	POPUL				10	0 - 215	0 - 5	10	0 - 250	0 - 5			
elm	ULMUS				10	0 - 215	0 - 5	10	0 - 250	0 - 5			
russian olive	ELAN				10	0 - 215	0 - 5	10	0 - 250	0 - 5			
other trees	2TREE				10	0 - 0	0 - 5	10	0 - 0	0 - 5			
Annual Production lbs./acre													
GRASSES & GRASS-LIKES			LOW	RV	HIGH		LOW	RV	HIGH		LOW	RV	HIGH
FORBS			3280	4320	5400		2990	3720	4510		2580	4400	5370
SHRUBS			220	360	550		210	366	550		220	375	550
TREES			0	120	250		0	108	220		0	100	205
TOTAL			3500	4800	6200		3200	4300	5500		2800	5000	6400

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.

Bluestem/Indiangrass/Switchgrass Plant Community

Interpretations are primarily based on the Bluestem/Indiangrass/Switchgrass Plant Community (this is also considered climax). This site evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community is found on areas that are properly managed with grazing and/or prescribed burning. Harvesting hay at a different time during the growing season each year allows this plant community to persist. The potential vegetation is about 75% grasses, 10% grass-like plants, 10% forbs, and 5% woody plants. Tall, warm-season grasses dominate.

The major grasses include big bluestem, Indiangrass, switchgrass, little bluestem, and grass-likes such as sedges, rushes and bulrushes. Other grasses occurring on this plant community include prairie cordgrass, sideoats grama, slender wheatgrass, and western wheatgrass. 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. 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 a normal year:

Growth curve number: NE6643

Growth curve name: Eroded Tableland, 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

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

- Haying or grazing that typically occurs at the same time of year every year can shift this plant community to the *Bluestem/Switchgrass/Western Wheatgrass Plant Community*. Haying or grazing at set times during the growing season can reduce plant diversity and reduce vigor of desirable plants.

Bluestem/Switchgrass/Western Wheatgrass Plant Community

Historically, this plant community evolved under annual haying or moderate summer grazing followed by heavy grazing in the fall. This plant community closely resembles, but lacks the diversity of the Bluestem/Indiangrass/Switchgrass Plant Community. The potential vegetation is about 80% grasses, 15% grass-like plants, 10% forbs, and 5% shrubs. Dominant grasses include big bluestem, switchgrass, western wheatgrass, and Kentucky bluegrass. Other grasses include little bluestem,

needlegrasses, slender wheatgrass, and other introduced grass species. Grass-like plants have increased. The abundance of forbs and shrubs remains constant, but species shifts have occurred.

Tall, warm-season grasses are suppressed, while cool-season grasses have increased. This plant community is not resistant to change, but is resilient.

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

Growth curve number: NE6642

Growth curve name: Eroded Tableland, warm-season dominant, cool-season sub-dominant.

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

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

- Timely haying and/or rotational grazing can shift this plant community back to the *Bluestem/Indiangrass/Switchgrass Plant Community*. Haying or grazing prior to the onset of active warm season grass growth or alternating haying with timely grazing will improve warm-season grass vigor. This early haying also reduces cool-season grass competition, and provides quality hay. Grazing after a killing frost in the fall will also help reduce cool-season grasses.
- Repeated annual mid summer haying or grazing can shift this plant community to the *Kentucky Bluegrass/Wheatgrass/Smooth Bromegrass Plant Community*.

Kentucky Bluegrass/Wheatgrass/Smooth Bromegrass Plant Community

Historically, this plant community evolved under long-term annual haying in mid summer. Cool-season grasses make up the majority of the plant community with the balance made up of warm-season grasses and miscellaneous forbs. The potential vegetation is about 70% grasses, 10% grass-like plants, 10% forbs, and 10% woody species. Dominant grasses include Kentucky bluegrass, western wheatgrass, smooth bromegrass, red top, and slender wheatgrass. Grasses of secondary importance include some warm-season grasses, and various grass-like species. Forbs commonly found in this plant community include red and white clover, common dandelion, cudweed sagewort, curly dock and western ragweed.

When compared to the Bluestem/Indiangrass/Switchgrass Plant Community, Kentucky bluegrass, smooth bromegrass and wheatgrasses have increased. Warm-season species such as big bluestem, switchgrass and Indiangrass have decreased, and production of other warm-season grasses has also been reduced. A number of introduced species will likely invade this plant community.

This site is often over-used as winter feed ground. American licorice may become a problem in areas where the cattle are hayed in the winter, and lower overall production of the site can be expected. This plant community is moderately resistant to change.

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

Growth curve number: NE6640

Growth curve name: Eroded Tableland, cool-season dominant, warm-season sub-dominant.

Growth curve description: Cool-season dominant, warm-season sub-dominant, 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

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

- Timely haying and/or rotational grazing can shift this plant community back to the *Bluestem/Switchgrass/Western Wheatgrass Plant Community*. Haying or grazing prior to the onset of active warm season grass growth or alternating haying with timely grazing will improve warm-season grass vigor. This early haying also reduces cool-season grass competition, and provides quality hay. Grazing after a killing frost in the fall will also help reduce cool-season grasses. Grazing this plant community in mid-May to early June will suppress cool-season grasses. Caution must be used on areas where Subirrigated and Wetland complexes exist, as concentrated spring grazing can cause damage on wetter sites.
- Seeding or encroachment of reed canarygrass will move this plant community to the *Reed Canary/Creeping Foxtail Plant Community*.

Reed Canary/Creeping Foxtail

This plant community occurs when a viable reproductive source is available due to proximity, or when seeded with reed canarygrass and/or creeping foxtail. Reed canarygrass and creeping foxtail seedlings have often been established when cool-season grass production deteriorates. However, this seeding practice has serious repercussions on numerous wildlife species, and once established becomes difficult to alter due to its aggressive behavior. While this plant community has a high production potential, forage quality is sacrificed.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Bluestem/Indiangrass/Switchgrass Plant Community:

Bluestem/Switchgrass/Western Wheatgrass Plant Community:

Kentucky Bluegrass/Wheatgrass/Smooth Bromegrass Plant Community:

Reed Canary/Creeping Foxtail Plant Community:

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-likes							
awlfuit sedge	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
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
bulrush	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
Canada wildrye	U D U U	N U N N	U D U U	N U N N	N U N N	U D U U	U D U U
foxtail barley	U D N N	N P N N	U D N N	N P N N	N P N N	U D N N	U D N N
green muhly	U D D U	N U N N	U D D U	N U N N	N U N N	U D D U	U D D U
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
plains bluegrass	U D U D	N D N U	U D U D	U P N D	U P N D	U D U D	U D U D
porcupine grass	U P U D	N D N U	U P U D	N D N U	N D N U	U P U D	U P U D
prairie cordgrass	U D D U	N N N N	U D D U	N N N N	N N N N	U D D U	U D D U
prairie wedgescale	U D U D	N D N U	U D U D	U P N D	U P N D	U D U D	U D U D
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
reed canarygrass	U D U U	N N N N	U D U U	N N N N	N N N N	U D U U	U D U U
rush	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
Sartwell's sedge	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
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
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
slender wheatgrass	U P U U	N D U N	U P U U	N D U N	N D U N	U P U U	U P U U
spikerush	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
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
upright sedge	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
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 licorice	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	N U U N
black-eyed Susan	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
blue verben	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
cinquefoil	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
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
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
giant goldenrod	N N U N	N U U N	N N U N	N U U N	N U U N	N N U N	N N U N
groundsel	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
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
horsetail	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
Illinois bundleflower	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
Maximilian 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
Missouri 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
Pennsylvania smartweed	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
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 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
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
showy milkweed	U U U U	N N U N	U U U U	N N U N	N N U N	U U U U	N N U N
stiff goldenrod	U U U U	N N U N	U U U U	N N U N	N N U N	U U U U	N N U 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
tall 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
western dock	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
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
western yarrow	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
white 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
wild strawberry	U D U U	N U U N	U D U U	N U U N	N U U N	U D U U	N U U 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
poison ivy	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
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
western snowberry	U U U U	U U U U	U U U U	D U D D	U U U U	U U U U	D U U U
willow	P U D P	P U D P	P U D P	P U D P	U U U U	P U D P	P U D P

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic

† Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

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 mostly in Hydrologic Soil Group A, but may include soils in Group B, and local areas in Group C. 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.

For the interpretive plant community, rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present. Litter falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts may be present but are not significant for hydrologic considerations. Overall this site has the appearance of being very stable and extremely productive.

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

- (R066XY032NE) – Sandy 18-22” P.Z.
- (R066XY054NE) – Sandy 22-25” P.Z.
- (R066XY033NE) – Sands 18-22” P.Z.
- (R066XY055NE) – Sands 22-25” P.Z.
- (R066XY044NE) – Wetland
- (R066XY045NE) – Wet Subirrigated

Similar Sites

- (R066XY045NE) – Wet Subirrigated
[less big bluestem; no little bluestem, more prairie cordgrass; bluejoint reedgrass common; more 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: Wayne Bachman, Soil Scientist, NRCS; Stan Boltz, Range Management Specialist, NRCS; Anna Ferguson, Soil Conservationist, NRCS; Roger Hammer, Soil Scientist, NRCS; Dana Larsen, Range Management Specialist, NRCS; Dave Schmidt, Rangeland Management Specialist, NRCS; Kim Stine, Rangeland Management Specialist, NRCS.

State Correlation

This site has been correlated with Nebraska and South Dakota in MLRA 66.

Field Offices Counties

Ainsworth, NE	Brown, Keya Paha & Rock
Bloomfield, NE	Knox
Burke, SD	Gregory
Martin, SD	Bennett & Shannon
Neligh, NE	Antelope

Field Offices Counties

O'Neill, NE	Holt
Spencer, NE	Boyd
Valentine, NE	Cherry
White River, SD	Mellette, Todd
Winner, SD	Tripp

Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 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://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, 2002. National Soil Survey Handbook, title 430-VI. (<http://soils.usda.gov/technical/handbook/>)

Site Description Approval

NE, State Range Management Specialist Date

SD, State Range Management Specialist Date