

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Wet Land

**Site ID:** R066XY044NE

**Major Land Resource Area:**  
66 – Dakota - Nebraska Eroded Tableland



### Physiographic Features

This site occurs on nearly level wet swales of interdunes on uplands and on floodplains of valleys.

**Landform:** swale, flood plain

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1900	3000
<b>Slope (percent):</b>	0	1
<b>Water Table Depth (inches):</b>	0	12
<b>Flooding:</b>		
<b>Frequency:</b>	None	Frequent
<b>Duration:</b>	None	Brief
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	6
<b>Frequency:</b>	Occasional	Occasional
<b>Duration:</b>	Long	Long
<b>Runoff Class:</b>	Negligible	Negligible

### 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>
<b>Frost-free period (days):</b>	127	154
<b>Freeze-free period (days):</b>	144	173
<b>Mean Annual Precipitation (inches):</b>	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

<b>Climate Stations</b>		<b>Period</b>	
<b>Station ID</b>	<b>Location or Name</b>	<b>From</b>	<b>To</b>
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**

<b>Wetland Description:</b>	<b>System</b>	<b>Subsystem</b>	<b>Class</b>	<b>Sub-class</b>
Cowardin, et al., 1979	Lacustrine	Littoral	Unconsolidated Shoreline	Permanently or Semi-permanently or Seasonally Flooded
OR:				
Cowardin, et al., 1979	Palustrine	N/A	Persistent Emergent Wetland	Permanently or Semi-permanently or Seasonally Flooded or Saturated

These wetland types include: fen, abandoned ox-bow

**Stream Type:** None  
(Rosgen System)

## Representative Soil Features

The features common to all soils in this site are the loamy sand to loam textured surface layers and slopes of 0 to 1 percent. A number of soils have surfaces of mucky peat and/or slightly decomposed plant material. The soils in this site are very poorly drained and formed in eolian sands and sandy alluvium on upland swales and sandy alluvium on floodplains. The texture of the control section ranges from loamy sand to gravelly coarse sand and has thin strata of loamy material. 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. Cryptobiotic crusts are present, but their function is not well understood. Pedestalling of plants does not typically occur on this site.

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:** fine sandy loam, fine sand, silt loam

**Surface Texture Modifier:** none

**Subsurface Texture Group:** sandy

**Surface Fragments  $\leq 3''$  (% Cover):** 0-5

**Surface Fragments  $> 3''$  (%Cover):** 0

**Subsurface Fragments  $\leq 3''$  (% Volume):** 0-15

**Subsurface Fragments  $> 3''$  (% Volume):** 0

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	very poorly	very poorly
<b>Permeability Class:</b>	rapid	rapid
<b>Depth (inches):</b>	80	80
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	4
<b>Sodium Absorption Ratio*:</b>	0	5
<b>Soil Reaction (1:1 Water)*:</b>	5.6	8.4
<b>Soil Reaction (0.1M CaCl<sub>2</sub>)*:</b>	5.1	7.3
<b>Available Water Capacity (inches)*:</b>	3	16
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	40

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

## Plant Communities

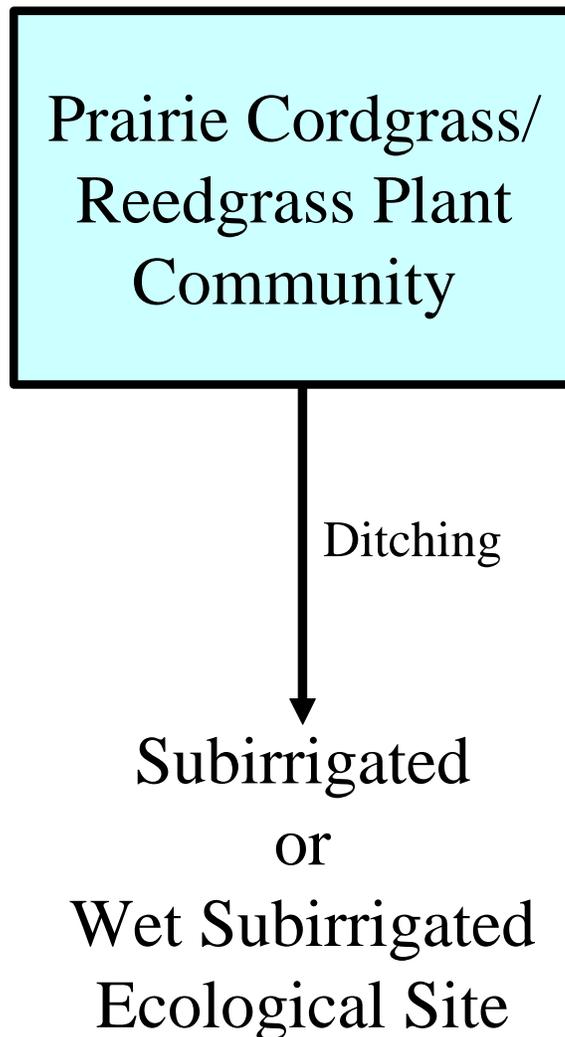
### Ecological Dynamics of the Site:

Typically, this site is extremely stable. Plant species composition and production does not fluctuate greatly under most management scenarios. Ditching is an exception, but this practice usually results in a shift to another ecological site, such as the Wet Subirrigated or the Subirrigated ecological site.

Interpretations are based on the Prairie Cordgrass/Reedgrass 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



**Plant Community Composition and Group Annual Production**

			Prairie Cordgrass/Reedgrass		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
<b>GRASSES</b>				3190 - 4930	55 - 85
prairie cordgrass	Spartina pectinata	SPPE	1	1450 - 4060	25 - 70
<b>REEDGRASSES</b>			<b>2</b>	<b>290 - 2030</b>	<b>5 - 35</b>
northern reedgrass	Calamagrostis stricta ssp. inexpansa	CASTI3	2	290 - 1160	5 - 20
bluejoint reedgrass	Calamagrostis canadensis	CACA4	2	0 - 1160	0 - 20
narrow reedgrass	Calamagrostis stricta ssp. stricta	CASTS5	2	0 - 870	0 - 15
<b>OTHER NATIVE GRASSES</b>			<b>3</b>	<b>290 - 870</b>	<b>5 - 15</b>
plains bluegrass	Poa arida	POAR3	3	290 - 580	5 - 10
slender wheatgrass	Elymus trachycaulus ssp. trachycaulus	ELTRT	3	0 - 580	0 - 10
foxtail barley	Hordeum jubatum	HOJU	3	0 - 290	0 - 5
green muhly	Muhlenbergia racemosa	MURA	3	0 - 290	0 - 5
other perennial grasses		2GP	3	0 - 116	0 - 2
<b>GRASS-LIKES</b>			<b>4</b>	<b>870 - 1740</b>	<b>15 - 30</b>
sedge	Carex spp.	CAREX	4	870 - 1740	15 - 30
rush	Juncus spp.	JUNCU	4	0 - 580	0 - 10
bulrush	Schoenoplectus spp.	SCHOE6	4	0 - 290	0 - 5
spikerush	Eleocharis spp.	ELEOC	4	0 - 290	0 - 5
other grass-likes		2GL	4	0 - 290	0 - 5
<b>FORBS</b>			<b>5</b>	<b>116 - 580</b>	<b>2 - 10</b>
aster	Aster spp.	ASTER	5	0 - 290	0 - 5
Pennsylvania smartweed	Polygonum pensylvanicum	POPE2	5	0 - 290	0 - 5
swamp smartweed	Polygonum hydropiperoides	POHY2	5	0 - 290	0 - 5
wild strawberry	Fragaria virginiana	FRVI	5	0 - 116	0 - 2
cinquefoil	Potentilla spp.	POTEN	5	0 - 116	0 - 2
wild mint	Mentha arvensis	MEAR4	5	0 - 116	0 - 2
American licorice	Glycyrrhiza lepidota	GLLE3	5	0 - 116	0 - 2
arrowgrass	Triglochin palustre	TRPA6	5	0 - 116	0 - 2
other perennial forbs		2FP	5	0 - 116	0 - 2
other annual forbs		2FA	5	0 - 116	0 - 2
<b>SHRUBS</b>			<b>6</b>	<b>0 - 290</b>	<b>0 - 5</b>
false indigo	Amorpha fruticosa	AMFR	6	0 - 174	0 - 3
coyote willow	Salix exigua	SAEX	6	0 - 174	0 - 3
Missouri River willow	Salix eriocephala	SAER	6	0 - 174	0 - 3
meadow willow	Salix petiolaris	SAPE5	6	0 - 174	0 - 3
other shrubs		2SHRUB	6	0 - 116	0 - 2

Annual Production lbs./acre	LOW	RV	HIGH
<b>GRASSES</b>	3735 -	4002	- 4225
<b>GRASS-LIKES</b>	850 -	1305	- 1600
<b>FORBS</b>	115 -	348	- 650
<b>SHRUBS</b>	0 -	145	- 325
<b>TOTAL</b>	4700 -	5800	- 6800

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 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 Cordgrass/Reedgrass Plant Community**

Interpretations are primarily based on the Prairie Cordgrass/Reedgrass Plant Community (this is also considered climax). This plant community is very resistant to any change that does not affect the associated water table. With a seasonably high water table that ranges from above the ground surface in wet years to within one foot of the surface in dry years, traditional hayland management usually leaves these areas idle. Primary use is by wildlife species. The potential vegetation is about 55% grasses, 30% grass-like plants, 10% forbs, and 5% shrubs. The dominant grass is prairie cordgrass. A wide variety of grass-like plants exist, and may comprise up to 30% of the plant community. Forbs include Pennsylvania and swamp smartweed, wild strawberry, and cinquefoil. Dominant shrubs are false indigo and willow.

Ditching has been a traditional management tool. Draining a wetland effectively changes the hydrology of the site and allows it to more closely resemble a Subirrigated or Wet Subirrigated ecological site. Once ditched, significant inputs are required to restore and maintain the high water table.

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: NE6543

Growth curve name: Nebraska/South Dakota Sandhills, Native Grasslands, Wet

Growth curve description: Warm-season dominant, cool-season subdominant, mid & tall grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	35	25	10	5	0	0	0

## **Ecological Site Interpretations**

### **Animal Community – Wildlife Interpretations**

-- Under Development --

**Prairie Cordgrass/Reedgrass Plant Community:**

### Animal Preferences (Quarterly – 1,2,3,4<sup>†</sup>)

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses</b>							
bluejoint reedgrass	U P D U	N D U N	U P D U	N D U N	N D U N	U P D U	U P D 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
narrow reedgrass	U P U D	N D U N	U P U D	N D U N	N D U N	U P U D	U P U D
northern reedgrass	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
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
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
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
<b>Grass-likes</b>							
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
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
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
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
<b>Forbs</b>							
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
arrowgrass	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
aster	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U
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
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
swamp 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
wild mint	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
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
<b>Shrubs</b>							
false indigo	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 U N
coyote 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
Missouri River 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
meadow 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

<sup>†</sup> 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**

Excessive water is the principal factor limiting forage production on this site. Soils on this site are in Hydrologic Soil Group D due to high water tables. Although soils are permeable, high water tables limit infiltration. Surrounding upland areas tend to have very permeable soils that cause surface inflow peaks to these sites to be muted. Outflows generally occur only as a result of very intense storms or seepage inflows during very wet years. Many areas are frequently to continuously flooded. For the interpretive plant community, rills and gullies are not typically present. Water flow patterns should be barely distinguishable if at all present. Pedestals are not typically present. Litter falls in place, and signs of movement are not common. Litter often accumulates to create muck peat like conditions. Chemical and physical crusts are rare. Cryptogamic crusts are present but are not expected to significantly affect hydrologic considerations. Overall this site has the appearance of being stable and productive.

## **Recreational Uses**

This site provides hunting opportunities for upland game and waterfowl 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**

None noted.

## **Supporting Information**

### **Associated Sites**

- (066XY045NE) – Wet Subirrigated
- (066XY046NE) – Subirrigated

### **Similar Sites**

- (066XY045NE) – Wet Subirrigated  
[big bluestem/prairie cordgrass co-dominant; more switchgrass; less productive]

## **Inventory Data References**

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was 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.

<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 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://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, 2002. National Soil Survey Handbook, title 430-VI. (<http://soils.usda.gov/procedures/handbook/main.htm>)

### Site Description Approval

\_\_\_\_\_  
NE, State Range Management Specialist      Date

\_\_\_\_\_  
SD, State Range Management Specialist      Date