

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

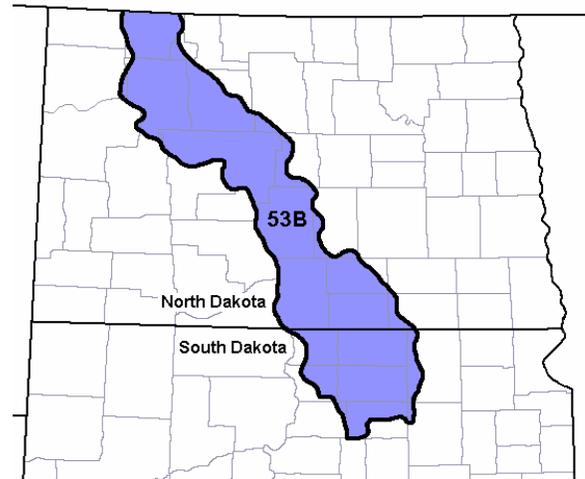
**Site Name:** Wet Meadow

**Site Type:** Rangeland

**Site ID:** R053BY019ND

**Major Land Resource Area (MLRA):** 53B – Central Dark Brown Glaciated Plains

For more information on MLRA's, refer to the following Web site: [http://www.soilinfo.psu.edu/soil\\_lrr/](http://www.soilinfo.psu.edu/soil_lrr/).



### Physiographic Features

This site occurs on level to nearly level, or concave closed basins and depressions in low lying positions.

**Landform:** lake plain, outwash plain, till plain

**Aspect:** NA

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1600	2000
<b>Slope (percent):</b>	0	3
<b>Water Table Depth (inches):</b>	0	24
<b>Flooding:</b>		
<b>Frequency:</b>	None	Frequent
<b>Duration:</b>	None	Long
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	6
<b>Frequency:</b>	None	Frequent
<b>Duration:</b>	None	Long
<b>Runoff Class:</b>	Negligible	High

### Climatic Features

MLRA 53B is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are characteristic. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains. The air masses move unobstructed across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 15 to 20 inches per year. The normal average annual temperature is about 41°F. January is the coldest month with average temperatures ranging from about 4°F (Powers Lake, North Dakota (ND)), to about 10°F (Pollock, South Dakota (SD)). July is the warmest month with temperatures averaging from about 67°F (Powers Lake, ND), to about 72°F (Pollock, SD). The range of normal average monthly temperatures between the coldest and warmest months is about

62°F. This large annual range attests to the continental nature of this MLRA's climate. Winds 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 native cool-season plants begins in late March and continues to early to mid-July. Native warm-season plants begin growth in mid-May and continue to the end of August. Green up of cool-season plants can occur in September and October when adequate soil moisture is present.

	<u>Minimum</u>	<u>Maximum</u>
<b>Frost-free period (days):</b>	110	135
<b>Freeze-free period (days):</b>	129	156
<b>Mean Annual Precipitation (inches):</b>	15	20

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

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.41	0.48	-6.8	21.5
February	0.41	0.57	0.7	28.9
March	0.57	1.09	12.0	39.7
April	1.31	2.01	27.0	57.4
May	1.98	2.92	38.6	70.8
June	3.17	3.80	48.4	79.3
July	2.38	2.84	52.9	86.2
August	1.82	2.17	50.8	85.6
September	1.37	1.67	39.9	74.2
October	0.62	1.30	28.3	61.2
November	0.53	0.74	13.7	41.2
December	0.43	0.43	0.3	27.2

Climate Stations		Period	
Station ID	Location or Name	From	To
ND3376	Garrison 1 NNW	1948	2001
SD4891	Leola	1948	2001
ND6383	New Town 4 W	1952	1985
SD6712	Pollock	1948	2001
ND7281	Powers Lake	1948	2001
SD7277	Roscoe	1948	2001

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

## Influencing Water Features

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

## Representative Soil Features

These are very deep, poorly drained, coarse to fine textured soils. Saturated hydraulic conductivity is rapid to slow and available water capacity is low to high. Salinity and sodicity are none to slight. Water tables on this site range from one-half foot above to two feet below the surface several weeks during the growing season. The site normally receives additional water from surface runoff and/or underground seepage. This site occurs in flats and depressions on lake plains, outwash plains and till

plains. Slope ranges from zero to three percent. This site should show no evidence of rills, wind scoured areas or pedestalled plants. The soil surface is stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration. Ponded water conditions and slow permeability strongly influences the soil-water-plant relationship.

Major soil series correlated to this ecological site can be found in Section II of the Natural Resources Conservation Service (NRCS) Field Office Technical Guide or the following Web sites:

<http://www.nrcs.usda.gov/technical/efotg/>

**Parent Material Kind:** glaciolacustrine deposits, outwash, alluvium

**Parent Material Origin:** sedimentary, till

**Surface Texture:** silt loam, loam, silty clay loam

**Surface Texture Modifier:** none

**Subsurface Texture Group:** loamy

**Surface Fragments ≤3" (% Cover):** 0-10

**Surface Fragments >3" (%Cover):** 0-5

**Subsurface Fragments ≤3" (% Volume):** 0-15

**Subsurface Fragments >3" (% Volume):** 0-5

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	poorly	poorly
<b>Permeability Class:</b>	slow	rapid
<b>Depth to first restrictive layer (inches):</b>	80	80
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	16
<b>Sodium Absorption Ratio*:</b>	0	5
<b>Soil Reaction (1:1 Water)*:</b>	5.6	9.0
<b>Soil Reaction (0.1M CaCl<sub>2</sub>)*:</b>	NA	NA
<b>Available Water Capacity (inches)*:</b>	4	8
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	45

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

## **Plant Communities**

### **Ecological Dynamics of the Site:**

The site developed under Northern Great Plains climatic conditions, and included natural influence of large herbivores and occasional fire. Changes will occur in the plant communities due to climatic conditions and/or management actions. Due to the nature of the soils, the site is considered quite stable. Under continued adverse impacts, a slow decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can quickly return to the Historic Climax Plant Community (HCPC).

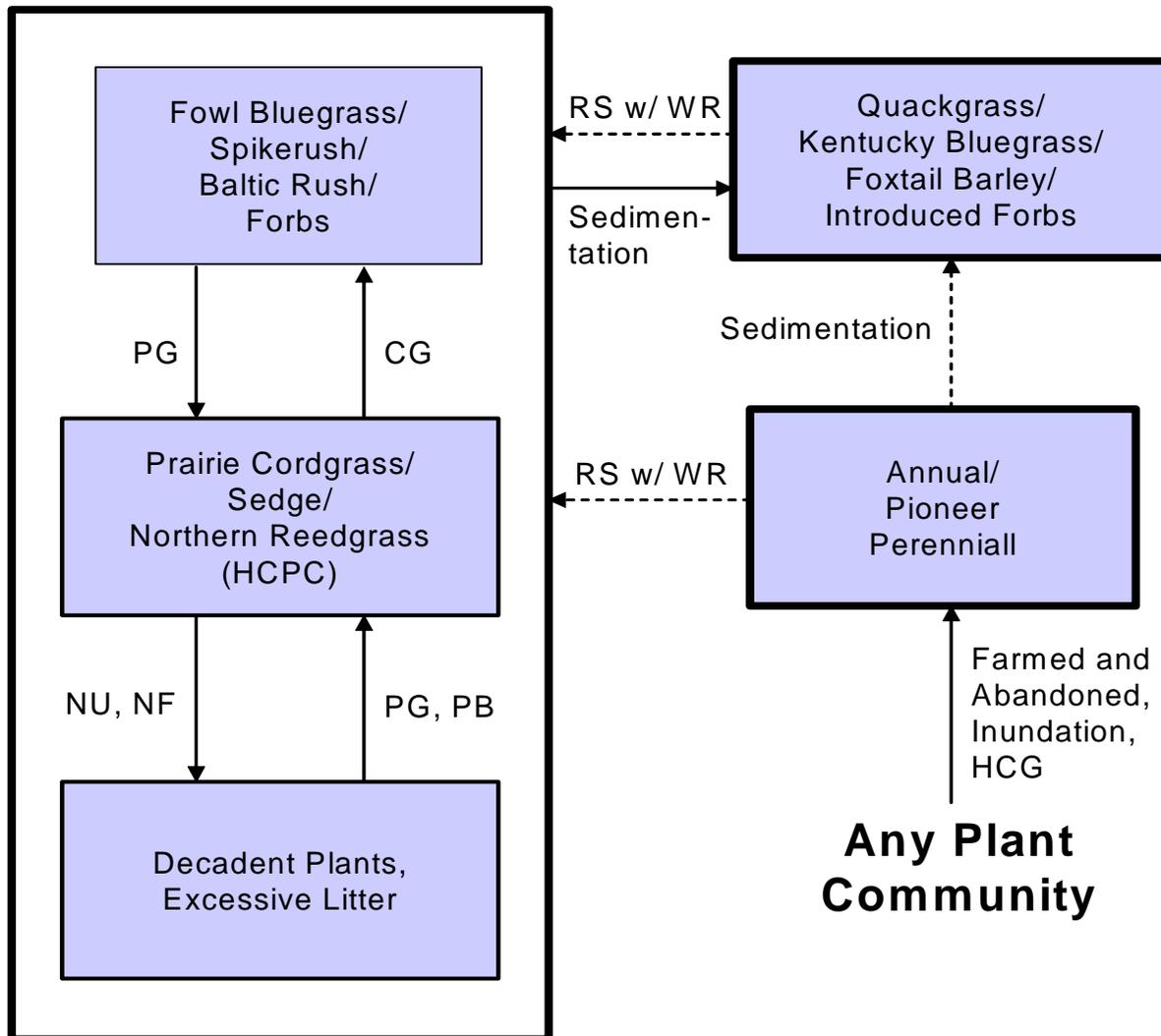
The plant community upon which interpretations are primarily based is the HCPC. The HCPC has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed 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.

Ecological changes occur on this site primarily because of continuous grazing without adequate recovery opportunities between grazing events, and over rest or non-use and lack of fire. Continuous grazing will cause species such as spikerush, Baltic rush and native bluegrass to increase.

Introduced species such as Kentucky bluegrass will begin to invade and dominate. Grasses such as prairie cordgrass and northern reedgrass will decrease in frequency and production and can eventually be removed from the site. Non-use (extended rest over years) or lack of fire will cause litter levels and plant decadence/mortality to increase.

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



**CG** – Continuous grazing without adequate recovery periods; **HCG** – Heavy continuous grazing; **HCPC** – Historic Climax Plant Community; **NU, NF** – Non-use, no fire; **PB** – Prescribed burning; **PG** – Prescribed grazing with adequate recovery opportunity; **RS** – Range seeding with prescribed grazing; **WR** – Wetland restoration.

## Plant Community Composition and Group Annual Production

		Prairie Cordgrass/Sedge/ Northern Reedgrass (HCPC)			
COMMON/GROUP NAME	SYMBOL	Group	lbs./acre	% Comp	
<b>GRASSES</b>		1	1575 - 2250	35 - 50	
prairie cordgrass	SPPE	1	900 - 1350	20 - 30	
northern reedgrass	CASTI3	1	450 - 675	10 - 15	
switchgrass	PAVI2	1	45 - 225	1 - 5	
western wheatgrass	PASM	1	90 - 225	2 - 5	
fowl bluegrass	POPA2	1	45 - 225	1 - 5	
mat muhly	MURI	1	0 - 90	0 - 2	
tufted hairgrass	DECA18	1	45 - 90	1 - 2	
foxtail barley	HOJU	1	0 - 45	0 - 1	
other perennial grasses	2GP	1	0 - 225	0 - 5	
<b>GRASS-LIKES</b>		2	900 - 1800	20 - 40	
Baltic rush	JUBA	2	45 - 90	1 - 2	
clustered field sedge	CAPR5	2	225 - 450	5 - 10	
fescue sedge	CABR10	2	225 - 450	5 - 10	
flatsedge	CYPER	2	45 - 90	1 - 2	
Sartwell's sedge	CASA8	2	225 - 450	5 - 10	
spikerush	ELEOC	2	90 - 225	2 - 5	
woolly sedge	CAPE42	2	225 - 450	5 - 10	
other grass-likes	2GL	2	90 - 360	2 - 8	
<b>FORBS</b>		3	90 - 450	2 - 10	
blue-eyed grass	SISYR	3	0 - 45	0 - 1	
cinquefoil	POTEN	3	0 - 45	0 - 1	
dogbane	APOCY	3	45 - 90	1 - 2	
Flodman's thistle	CIFL	3	0 - 45	0 - 1	
goldenrod	SOLID	3	45 - 90	1 - 2	
Macoun's buttercup	RAMA2	3	45 - 90	1 - 2	
meadow anemone	ANCA8	3	0 - 45	0 - 1	
mint	MENTH	3	45 - 90	1 - 2	
Rydberg's sunflower	HENUR	3	45 - 90	1 - 2	
western dock	RUAQ	3	0 - 45	0 - 1	
white panicle aster	SYLAL4	3	0 - 45	0 - 1	
wood lily	LIPH	3	0 - 45	0 - 1	
other perennial forbs	2FP	3	0 - 45	0 - 1	
<b>Annual Production lbs./acre</b>			LOW	RV	HIGH
<b>GRASSES</b>			2815 -	2880 -	2900
<b>GRASS-LIKES</b>			1100 -	1350 -	1600
<b>FORBS</b>			85 -	270 -	500
<b>TOTAL</b>			4000 -	4500 -	5000

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/GROUP NAME	SYMBOL	Prairie Cordgrass/Sedge/ Northern Reedgrass (HCPC)			Fowl Bluegrass/Spikerush/ Baltic Rush/Forbs			Decadent Plant, Excessive Litter			Quackgrass/Kentucky Bluegrass/ Foxtail Barley/Introduced Forbs		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES</b>													
prairie cordgrass	SPPE	1	1575 - 2250	35 - 50	1	1225 - 1575	35 - 45	1	1925 - 2275	55 - 65	1	1000 - 1250	40 - 50
northern reedgrass	CASTI3	1	450 - 675	10 - 15	1	0 - 70	0 - 2	1	35 - 175	1 - 5			
switchgrass	PAVI2	1	45 - 225	1 - 5	1	0 - 105	0 - 3	1	70 - 350	2 - 10			
western wheatgrass	PASM	1	90 - 225	2 - 5	1	70 - 245	2 - 7	1	70 - 350	2 - 10	1	0 - 125	0 - 5
fowl bluegrass	POPA2	1	45 - 225	1 - 5	1	175 - 350	5 - 10	1	70 - 525	2 - 15	1	125 - 375	5 - 15
mat muhly	MURI	1	0 - 90	0 - 2	1	70 - 175	2 - 5	1	0 - 70	0 - 2	1	25 - 125	1 - 5
tufted hairgrass	DECA18	1	45 - 90	1 - 2	1	70 - 175	2 - 5	1	0 - 70	0 - 2	1	0 - 50	0 - 2
foxtail barley	HOJU	1	0 - 45	0 - 1	1	35 - 175	1 - 5	1	35 - 175	1 - 5	1	125 - 750	5 - 30
quackgrass	ELRE4				1	0 - 350	0 - 10	1	0 - 1050	0 - 30	1	0 - 875	0 - 35
Kentucky bluegrass	POPR				1	70 - 350	2 - 10	1	70 - 525	2 - 15	1	125 - 625	5 - 25
creeping meadow foxtail	ALAR				1	0 - 350	0 - 10	1	0 - 875	0 - 25	1	0 - 875	0 - 35
other annual grasses	2GA				1	35 - 175	1 - 5	1	0 - 175	0 - 5	1	0 - 250	0 - 10
other perennial grasses	2GP	1	0 - 225	0 - 5	1	0 - 140	0 - 4	1	0 - 175	0 - 5	1	0 - 125	0 - 5
<b>GRASS-LIKES</b>													
Baltic rush	JUBA	2	45 - 90	1 - 2	2	175 - 350	5 - 10	2	35 - 175	1 - 5	2	250 - 500	10 - 20
clustered field sedge	CAPR5	2	225 - 450	5 - 10	2	175 - 350	5 - 10	2	70 - 350	2 - 10	2	50 - 250	2 - 10
fescue sedge	CABR10	2	225 - 450	5 - 10	2	175 - 525	5 - 15	2	35 - 175	1 - 5	2	25 - 200	1 - 8
flatsedge	CYPER	2	45 - 90	1 - 2	2	175 - 350	5 - 10	2	35 - 175	1 - 5	2	50 - 250	2 - 10
Sartwell's sedge	CASA8	2	225 - 450	5 - 10	2	35 - 175	1 - 5	2	70 - 350	2 - 10	2	25 - 50	1 - 2
spikerush	ELEOC	2	90 - 225	2 - 5	2	350 - 700	10 - 20	2	70 - 350	2 - 10	2	125 - 625	5 - 25
woolly sedge	CAPE42	2	225 - 450	5 - 10	2	70 - 175	2 - 5	2	70 - 350	2 - 10	2	0 - 50	0 - 2
other grass-likes	2GL	2	90 - 360	2 - 8	2	35 - 245	1 - 7	2	35 - 175	1 - 5	2	0 - 50	0 - 2
<b>FORBS</b>													
blue-eyed grass	SISYR	3	0 - 45	0 - 1	3	35 - 105	1 - 3	3	0 - 70	0 - 2	3	0 - 75	0 - 3
cinquefoil	POTEN	3	0 - 45	0 - 1	3	35 - 105	1 - 3	3	35 - 70	1 - 2	3	25 - 125	1 - 5
common dandelion	TAOF				3	35 - 140	1 - 4	3	0 - 70	0 - 2	3	25 - 100	1 - 4
curly dock	RUCR				3	35 - 245	1 - 7	3	0 - 105	0 - 3	3	50 - 250	2 - 10
dogbane	APOCY	3	45 - 90	1 - 2	3	35 - 175	1 - 5	3	0 - 70	0 - 2	3	25 - 125	1 - 5
Flodman's thistle	CIFL	3	0 - 45	0 - 1	3	0 - 105	0 - 3	3	0 - 70	0 - 2	3	25 - 75	1 - 3
goldenrod	SOLID	3	45 - 90	1 - 2	3	35 - 105	1 - 3	3	0 - 70	0 - 2	3	25 - 50	1 - 2
Macoun's buttercup	RAMA2	3	45 - 90	1 - 2	3	0 - 70	0 - 2						
meadow anemone	ANCA8	3	0 - 45	0 - 1	3	0 - 35	0 - 1	3	0 - 35	0 - 1	3	0 - 25	0 - 1
mint	MENTH	3	45 - 90	1 - 2				3	0 - 35	0 - 1			
Rydberg's sunflower	HENUR	3	45 - 90	1 - 2				3	0 - 35	0 - 1			
western dock	RUAQ	3	0 - 45	0 - 1	3	0 - 105	0 - 3	3	0 - 35	0 - 1	3	0 - 75	0 - 3
white panicle aster	SYLA6	3	0 - 45	0 - 1	3	0 - 105	0 - 3	3	0 - 35	0 - 1	3	0 - 125	0 - 5
wood lily	LIPH	3	0 - 45	0 - 1				3	0 - 35	0 - 1	3	0 - 25	0 - 1
other perennial forbs	2FP	3	0 - 45	0 - 1	3	0 - 105	0 - 3	3	0 - 105	0 - 3	3	0 - 125	0 - 5
other annual forbs	2FA				3	0 - 140	0 - 4	3	0 - 105	0 - 3	3	0 - 125	0 - 5
<b>Annual Production lbs./acre</b>													
		LOW	RV	HIGH	LOW	RV	HIGH	LOW	RV	HIGH	LOW	RV	HIGH
<b>GRASSES</b>		2615	2880	3100	1230	1838	2425	1835	2503	3120	930	1500	2050
<b>GRASS-LIKES</b>		800	1350	1900	1100	1400	1700	600	875	1200	550	750	950
<b>FORBS</b>		85	270	500	170	263	375	65	123	180	120	250	400
<b>TOTAL</b>		3500	4500	5500	2500	3500	4500	2500	3500	4500	1600	2500	3400

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 (DPC)." According to the USDA NRCS National Range and Pasture Handbook, 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/Sedge/Northern Reedgrass Plant Community

This is the interpretive plant community and is considered to be the HCPC. This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. It can be found on grazed areas, where grazed plants receive adequate periods of rest during the growing season in order to recover. Historically, fires occurred infrequently.

The potential vegetation is about 50 percent grasses, 40 percent grass-likes, and 10 percent forbs by air-dry weight. Prairie cordgrass is the dominant tall warm-season grass occupying this plant community. Northern reedgrass is the dominant tall cool-season species. A variety of sedges and rushes occur throughout this community as well as switchgrass and fowl bluegrass. Key forbs include Maximillian sunflower, Canada goldenrod, and cinquefoil.

This plant community is diverse, stable, and productive, and is well adapted to the Northern Great Plains. The high water table supplies much of the moisture for plant growth. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. The diversity in plant species allows for the variability of both the fluctuations of water table and reoccurring flooding. This is a sustainable plant community in terms of soil stability, watershed function and biologic integrity.

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

Growth curve number: ND5308

Growth curve name: Missouri Coteau, lowland cool-season/warm-season co-dominant.

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

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	35	35	15	5	5	2	0	0

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

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community to the *Fowl Bluegrass/Spikerush/Baltic Rush/Forbs Plant Community*.
- Non-use and no fire will move this plant community to the *Decadent Plants, Excessive Litter Plant Community*.
- Farmed and abandoned land or long-term inundation will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### Fowl Bluegrass/Spikerush/Baltic Rush/Forbs Plant Community

This plant community will slowly develop from the adverse effects of continuous grazing, without adequate recovery periods between each grazing event during the growing season. Recognition of this plant community will enable the land user to implement key management decisions before a significant ecological threshold is crossed.

Prairie cordgrass has been reduced in this plant community, but still persists in fair amounts. Kentucky bluegrass and western wheatgrass are the dominant species. Spikerush and Baltic rush as well as other grass-likes have increased. Northern reedgrass has been significantly reduced. Switchgrass may be removed at this stage. Creeping meadow foxtail can typically invade along drainageways if an upstream seed source is present. Forb species would include asters, goldenrod and cinquefoil as well as a possible invasion of Canada thistle. Plant production and frequency have

been reduced. The water cycle, nutrient cycle and energy flow are slightly reduced but continue to adequately function.

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

Growth curve number: ND5307

Growth curve name: Missouri Coteau, 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	2	7	36	35	10	3	6	1	0	0

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

- Sedimentation following ponding will move this plant community across an ecological threshold toward the *Quackgrass/Kentucky Bluegrass/Foxtail Barley/Introduced Forbs Plant Community*.
- Prescribed grazing that includes adequate recovery opportunities will shift this plant community back to the *Prairie Cordgrass/Sedge/Northern Reedgrass Plant Community (HCPC)*.
- Heavy continuous grazing may convert this plant community to the *Annual/Pioneer Perennial Plant Community*.
- Farmed and abandoned land or long-term inundation will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### **Decadent Plants, Excessive Litter Plant Community**

This plant community develops after an extended period (10 to 20 years or more) of non-use or exclusion of fire. Eventually litter levels become high enough to reduce native grass vigor, diversity and density. Years of accumulated litter will tend to make this community wetter. Baltic rush and bulrush will increase. Hydrophytic forbs will also increase. Bluegrasses such as fowl bluegrass and Kentucky bluegrass as well as creeping meadow foxtail can flourish in this environment and will become a major component of this plant community.

This plant community is resistant to change without prescribed grazing and fire. The combination of both grazing and fire is most effective in moving this plant community towards the HCPC. Soil erosion is low. Runoff is similar to the HCPC. Once this plant community is reached, time and external resources will be needed to see any immediate recovery.

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

Growth curve number: ND5306

Growth curve name: Missouri Coteau, lowland cool-season dominant.

Growth curve description: Cool-season dominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	37	35	5	2	8	0	0	0

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

- Prescribed grazing or prescribed burning followed by prescribed grazing will move this plant community toward the *Prairie Cordgrass/Sedge/Northern Reedgrass Plant Community*

(HCPC). This would require long-term management with prescribed grazing and/or prescribed burning under controlled conditions.

- Farmed and abandoned land or long-term inundation will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### Quackgrass/Kentucky Bluegrass/Foxtail Barley/Introduced Forbs Plant Community

This plant community develops with sedimentation following ponding. Various bluegrasses, spikerush, and Baltic rush dominate. Kentucky bluegrass invades on drier portions of the community. Prairie cordgrass persists in trace amounts, reduced in vigor. Goldenrod, dogbane, and cinquefoil increase.

A significant amount of production and diversity has been lost when compared to the HCPC. Loss or reduction of native cool and warm season grasses, and the forb component have negatively impacted energy flow and nutrient cycling. It will take an extended period of time to restore this plant community back to the HCPC with improved management. Renovation is typically not practical.

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

Growth curve number: ND5306

Growth curve name: Missouri Coteau, lowland cool-season dominant.

Growth curve description: Cool-season dominant, lowland.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	37	35	5	2	8	0	0	0

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

- Range seeding and/or wetland restoration can convert this plant community to one resembling the *Prairie Cordgrass/Sedge/Northern Reedgrass Plant Community (HCPC)*.
- Heavy continuous grazing may shift this plant community to the *Annual/Pioneer Perennial Plant Community*.
- Farmed and abandoned land or long-term inundation will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### Annual/Pioneer Perennial Plant Community

This plant community develops under severe disturbance (long-term heavy use by wildlife or livestock or go-back land) and/or long-term inundation. The dominant vegetation includes pioneer annual grasses, forbs, invaders, and early successional biennial and perennial species. Grasses may include inland saltgrass, foxtail barley, barnyardgrass, quackgrass, fowl bluegrass, Kentucky bluegrass, Baltic rush, and sedges. The dominant forbs include curlycup gumweed, Canada thistle, and other early successional species. The community is susceptible to invasion of nonnative species due to severe soil disturbances and relatively high percent of bare ground. This plant community is resistant to change, as long as soil disturbance or severe vegetation defoliation persists, thus holding back secondary plant succession.

Significant economic inputs, management and time would be required to move this plant community toward a higher successional stage. Secondary succession is highly variable, depending upon availability, and diversity of a viable reproductive source of higher successional species. This plant

community can be renovated to improve the production capability, but management changes would be needed to maintain the new plant community. The total annual production ranges from 500 to 1,500 lbs./ac. (air-dry weight) depending upon growing conditions.

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

- Range seeding and/or wetland restoration may convert this plant community to one resembling the *Prairie Cordgrass/Sedge/Northern Reedgrass Plant Community (HCPC)*.
- Sedimentation following ponding may move this plant community to the *Quackgrass/Kentucky Bluegrass/Foxtail Barley/Introduced Forbs Plant Community*.

## **Ecological Site Interpretations**

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

-- Under Development --

**Prairie Cordgrass/Sedge/Northern Reedgrass Plant Community:**

**Fowl Bluegrass/Spikerush/Baltic Rush/Forbs Plant Community:**

**Quackgrass/Kentucky Bluegrass/Foxtail Barley/Introduced Forbs Plant Community:**

**Decadent Plants, Excessive Litter Plant Community:**

**Annual/Pioneer Perennial Plant Community:**

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses</b>							
fowl bluegrass	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
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
mat muhly	N U U N	U U D U	N U U N	U U U U	U U U U	N U U N	N U U N
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
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
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
tufted hairgrass	U D P U	U D P U	U D P U	D D D D	D D D D	U D P U	U D P 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
<b>Grass-likes</b>							
Baltic 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
clustered field sedge	U D U U	U P N D	U D U U	U D U D	U D U D	U D U U	U D U U
fescue 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
flatsedge	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
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
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
woolly 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
<b>Forbs</b>							
blue-eyed grass	U U U U	U U P U	U U U U	U U P U	U U P U	U U U U	U U P 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
dogbane	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
Flodman's thistle	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
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
Macoun's buttercup	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
meadow anemone	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 U U
mint	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
Rydberg's 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
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
white panicle 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
wood lily	N U U N	N U D U	N U U N	N U D U	N U D U	N U U N	N U U N

**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

### Hydrology Functions

Water ponding is the principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic groups C and D. Infiltration is slow and runoff potential for this site is negligible. 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

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

## Supporting Information

### Associated Sites

(053BY005ND) – Loamy Overflow  
(053BY006ND) – Saline Lowland

(053BY012ND) – Subirrigated  
(053BY018ND) – Wet Land

### Similar Sites

(053BY018ND) – Wet Land (WL)

[Very poorly drained soils with noticeable redoximorphic features within six inches or just below the organic soil layer, found in depressions and along streams where water ponds at or above the surface for more the seven days. Found down slope of Wet Meadow site and can be in micro low positions within the listed associated sites. Indicator species are slough sedge, whitetop, prairie cordgrass, cattail, smartweed, and no shrub. This site has more production, far more slough sedge and far less prairie cordgrass.]

(053BY025ND) – Shallow Marsh (SM)

[This site also ponds, and has a water table similar to the Wet Meadow site for portions of the year. However, this site will normally dry out each year sufficiently that agricultural operations such as haying are feasible in most years. This site typically occurs in larger, isolated concave positions. Indicator species: dominated by whitetop and sedges, with lesser amounts of prairie cordgrass, bulrush and spikerush. This site has more whitetop and less prairie cordgrass, and higher production.]

## Inventory Data References

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. All descriptions were peer reviewed and/or field-tested by various private, state, and federal agency specialists. Those involved in developing this site description include: Stan Boltz, NRCS Range Management Specialist; Michael D. Brand, State Land Dept., Director Surface Management; David Dewald, NRCS State Biologist; Paul Drayton, NRCS District Conservationist; Jody Forman, NRCS Range Management Specialist; Dennis Froemke, NRCS Range Management Specialist; Jeff Printz, NRCS State Range Management Specialist; Josh Saunders, NRCS Range Management Specialist; Kevin Sedivec, Extension Rangeland Management Specialist; Darrell Vanderbusch, NRCS Resource Soil Scientist; and Lee Voigt, NRCS Range Management Specialist.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417	2	1970 – 1971	SD	Edmunds

## State Correlation

This site has been correlated with North Dakota and South Dakota in MLRA 53B.

## Field Offices

Aberdeen, SD	Gettysburg, SD	Minot, ND	Steele, ND
Ashley, ND	Ipswich, SD	Mohall, ND	Towner, ND
Bismarck, ND	Jamestown, ND	Mound City, SD	Turtle Lake, ND
Bowbells, ND	LaMoure, ND	Napoleon, ND	Watford City, ND
Ellendale, ND	Leola, SD	Redfield, SD	Williston, ND
Faulkton, SD	Linton, ND	Selby, SD	
Garrison, ND	McClusky, ND	Stanley, ND	

## Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 42a – Missouri Coteau; 42b – Collapsed Glacial Outwash; 42c – Missouri Coteau Slope; 42d – Northern Missouri Coteau; 42f – Southern Missouri Coteau Slope; 42g – Ponca Plains; and 42h – Southern River Breaks.

## 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

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

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SD, State Range Management Specialist      Date