

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

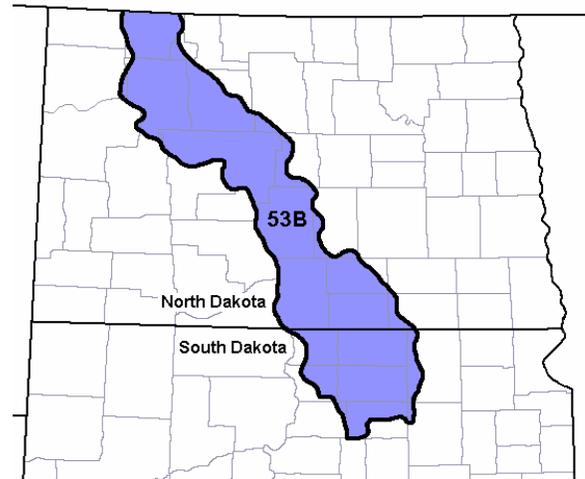
Site Name: Limy Subirrigated

Site Type: Rangeland

Site ID: R053BY004ND

Major Land Resource Area: 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/.



Physiographic Features

This site occurs on level, nearly level and slight rises on till plains and lake plains, and on slightly convex slopes adjacent to shallow depressions.

Landform: lake plain, till plain, outwash plain

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1600	2000
Slope (percent):	0	6
Water Table Depth (inches):	18	42
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Medium

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>
Frost-free period (days):	110	135
Freeze-free period (days):	129	156
Mean Annual Precipitation (inches):	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

This site has a persistent water table which strongly influences the production of the site, but does not influence the species present greatly. Most of the dominant species are typical upland plants.

Representative Soil Features

These are very deep, somewhat poorly drained, coarse to medium textured soils. These soils have a calcareous subsoil. Saturated hydraulic conductivity is moderately rapid to moderately slow and available water capacity is low to high. Salinity is none to very slight. Soils on this site are moderately to highly susceptible to wind erosion. This site is on flats and swales on lake plains, outwash plains, and till plains. Slope ranges from zero to six percent. This site should show slight to no evidence of rills, wind scoured areas or pedestalled plants. No water flow paths are seen on this site. The soil

surface is stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration.

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: lacustrine deposits, till, glaciolacustrine deposits

Parent Material Origin: sedimentary

Surface Texture: loam, silt 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): 0-25

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

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	somewhat poorly	somewhat poorly
Permeability Class:	moderately slow	moderately rapid
Depth (inches):	80	80
Electrical Conductivity (mmhos/cm)*:	0	16
Sodium Absorption Ratio*:	0	3
Soil Reaction (1:1 Water)*:	6.6	8.4
Soil Reaction (0.1M CaCl₂)*:	NA	NA
Available Water Capacity (inches)*:	5	8
Calcium Carbonate Equivalent (percent)*:	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 moderately resilient. Under continued adverse impacts, a slow decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can readily return to the Historic Climax Plant Community (HCPC).

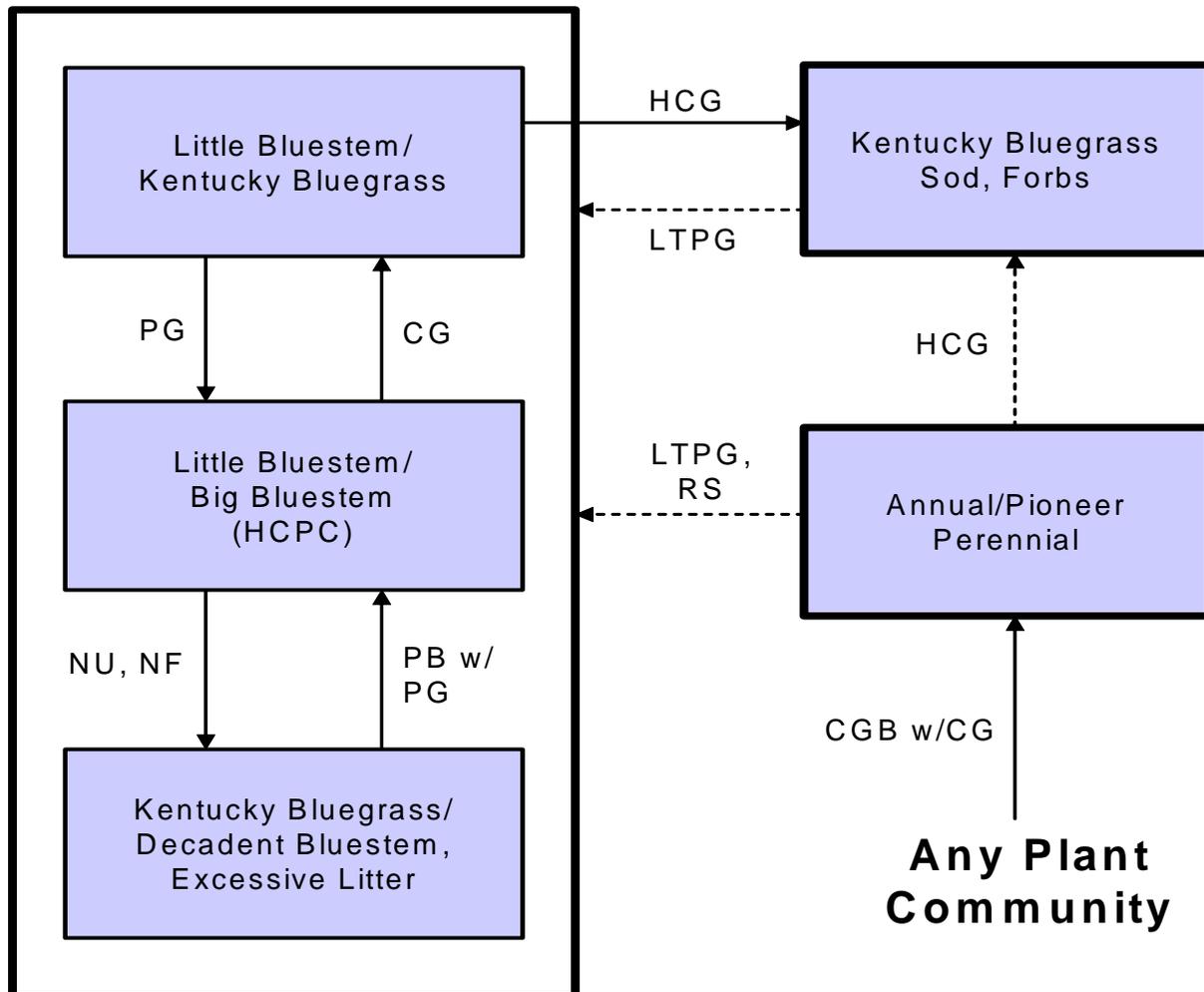
The plant community upon which interpretations are primarily based is the HCPC. The HCPC has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been considered. Subclimax plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience

Heavy continuous grazing and/or continuous seasonal (spring) grazing, without adequate recovery periods following each grazing occurrence causes this site to depart from the HCPC. Kentucky bluegrass will invade and increase in frequency and density. Kentucky bluegrass may eventually form into a dense sod under heavy continuous grazing. Grasses such as little bluestem, big bluestem,

switchgrass, and Indiangrass will decrease in frequency and production and can eventually be removed from the site. Non-use (rest) 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 opportunity;
CGB w/CG – Cropped go-back with continuous grazing; **HCG** - Heavy continuous grazing; **HCPC** - Historic Climax Plant Community; **LTPG** – Long-term prescribed grazing; **NU, NF** - No fire, non-use; **PB** – Prescribed burning; **PG** – Prescribed grazing with adequate recovery opportunity; **RS** – Range seeding followed by prescribed grazing.

Plant Community Composition and Group Annual Production

		Little Bluestem/Big Bluestem (HCPC)			
COMMON/GROUP NAME	SYMBOL	Group	lbs./acre	% Comp	
GRASSES & GRASS-LIKES			3060 - 3420	85 - 95	
TALL & MID WARM-SEASON		1	1440 - 1980	40 - 55	
little bluestem	SCSC	1	900 - 1260	25 - 35	
big bluestem	ANGE	1	360 - 720	10 - 20	
sideoats grama	BOCU	1	72 - 360	2 - 10	
switchgrass	PAV12	1	0 - 180	0 - 5	
Indiangrass	SONU2	1	0 - 180	0 - 5	
MID COOL-SEASON		2	180 - 540	5 - 15	
green needlegrass	NAVI4	2	72 - 360	2 - 10	
porcupine grass	HESP11	2	72 - 360	2 - 10	
western wheatgrass	PASM	2	72 - 360	2 - 10	
OTHER NATIVE GRASSES		3	108 - 180	3 - 5	
slender wheatgrass	ELTRT	3	36 - 180	1 - 5	
Canada wildrye	ELCA4	3	36 - 72	1 - 2	
fowl bluegrass	POPA2	3	36 - 72	1 - 2	
blue grama	BOGR2	3	36 - 180	1 - 5	
other perennial grasses	2GP	3	0 - 72	0 - 2	
GRASS-LIKES		4	180 - 360	5 - 10	
sedge	CAREX	4	180 - 360	5 - 10	
Baltic rush	JUBA	4	36 - 72	1 - 2	
other grass-likes	2GL	4	36 - 144	1 - 4	
FORBS		5	180 - 360	5 - 10	
American licorice	GLLE3	5	36 - 72	1 - 2	
anemone	ANEMO	5	0 - 36	0 - 1	
aster	ASTER	5	36 - 72	1 - 2	
cinquefoil	POTEN	5	0 - 36	0 - 1	
dogbane	APOCY	5	36 - 72	1 - 2	
Flodman's thistle	CIFL	5	0 - 36	0 - 1	
goldenrod	SOLID	5	36 - 72	1 - 2	
Maximilian sunflower	HEMA2	5	36 - 72	1 - 2	
mint	MENTH	5	0 - 36	0 - 1	
northern bedstraw	GABO2	5	0 - 36	0 - 1	
stiff sunflower	HEPA19	5	36 - 72	1 - 2	
western yarrow	ACMI2	5	0 - 72	0 - 2	
wood lily	LIPH	5	0 - 36	0 - 1	
other perennial forbs	2FP	5	0 - 108	0 - 3	
SHRUBS		6	72 - 180	2 - 5	
redosier dogwood	COSE16	6	36 - 72	1 - 2	
chokecherry	PRVI	6	0 - 72	0 - 2	
western snowberry	SYOC	6	36 - 108	1 - 3	
other shrubs	2SHRUB	6	0 - 72	0 - 2	
Annual Production lbs./acre			LOW	RV	HIGH
GRASSES & GRASS-LIKES			2555 -	3204	- 3840
FORBS			175 -	270	- 375
SHRUBS			70 -	126	- 185
TOTAL			2800 -	3600	- 4400

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	Little Bluestem/ Big Bluestem (HCPC)			Little Bluestem/ Kentucky Bluegrass			Kentucky Bluegrass Sod, Forbs			Kentucky Bluegrass/Decadent Bluestem, Excessive Litter		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
GRASSES & GRASS-LIKES			3060 - 3420	85 - 95		2040 - 2280	85 - 95		1500 - 1800	75 - 90		2320 - 2755	80 - 95
TALL & MID WARM-SEASON		1	1440 - 1980	40 - 55	1	600 - 840	25 - 35	1	0 - 100	0 - 5	1	145 - 435	5 - 15
little bluestem	SCSC	1	900 - 1260	25 - 35	1	600 - 840	25 - 35	1	0 - 100	0 - 5	1	145 - 435	5 - 15
big bluestem	ANGE	1	360 - 720	10 - 20	1	0 - 24	0 - 1				1	0 - 87	0 - 3
sideoats grama	BOCU	1	72 - 360	2 - 10	1	0 - 72	0 - 3				1	0 - 87	0 - 3
switchgrass	PAV12	1	0 - 180	0 - 5	1	0 - 24	0 - 1				1	0 - 87	0 - 3
Indiangrass	SONU2	1	0 - 180	0 - 5							1	0 - 58	0 - 2
MID COOL-SEASON		2	180 - 540	5 - 15	2	24 - 120	1 - 5	2	20 - 100	1 - 5	2	29 - 145	1 - 5
green needlegrass	NAV14	2	72 - 360	2 - 10	2	24 - 48	1 - 2	2	0 - 20	0 - 1	2	29 - 145	1 - 5
porcupine grass	HESP11	2	72 - 360	2 - 10	2	0 - 48	0 - 2				2	0 - 87	0 - 3
western wheatgrass	PASM	2	72 - 360	2 - 10	2	24 - 120	1 - 5	2	20 - 100	1 - 5	2	29 - 145	1 - 5
OTHER NATIVE GRASSES		3	108 - 180	3 - 5	3	48 - 192	2 - 8	3	60 - 240	3 - 12	3	58 - 232	2 - 8
slender wheatgrass	ELTR7	3	36 - 180	1 - 5	3	0 - 48	0 - 2				3	29 - 87	1 - 3
Canada wildrye	ELCA4	3	36 - 72	1 - 2	3	0 - 24	0 - 1				3	29 - 58	1 - 2
fowl bluegrass	POPA2	3	36 - 72	1 - 2	3	48 - 192	2 - 8	3	40 - 200	2 - 10	3	29 - 232	1 - 8
blue grama	BOGR2	3	36 - 180	1 - 5	3	24 - 120	1 - 5	3	20 - 100	1 - 5	3	0 - 87	0 - 3
other perennial grasses	2GP	3	0 - 72	0 - 2	3	0 - 48	0 - 2	3	0 - 80	0 - 4	3	0 - 145	0 - 5
GRASS-LIKES		4	180 - 360	5 - 10	4	120 - 240	5 - 10	4	100 - 300	5 - 15	4	145 - 435	5 - 15
sedge	CAREX	4	180 - 360	5 - 10	4	48 - 192	2 - 8	4	100 - 300	5 - 15	4	87 - 290	3 - 10
Baltic rush	JUBA	4	36 - 72	1 - 2	4	24 - 120	1 - 5	4	20 - 200	1 - 10	4	29 - 145	1 - 5
other grass-like	2GL	4	36 - 144	1 - 4	4	0 - 48	0 - 2	4	0 - 100	0 - 5	4	0 - 145	0 - 5
NON-NATIVE GRASSES		5			5	360 - 720	15 - 30	5	400 - 800	20 - 40	5	580 - 1160	20 - 40
Kentucky bluegrass	POPR				5	240 - 720	10 - 30	5	300 - 700	15 - 35	5	435 - 1160	15 - 40
smooth bromegrass	BRIN2				5	0 - 360	0 - 15	5	100 - 400	5 - 20	5	145 - 870	5 - 30
quackgrass	ELRE4				5	0 - 360	0 - 15	5	0 - 300	0 - 15	5	58 - 435	2 - 15
FORBS		6	180 - 360	5 - 10	6	48 - 240	2 - 10	6	200 - 400	10 - 20	6	145 - 290	5 - 10
American licorice	GLLE3	6	36 - 72	1 - 2	6	24 - 48	1 - 2				6	0 - 29	0 - 1
anemone	ANEMO	6	0 - 36	0 - 1							6	0 - 29	0 - 1
aster	ASTER	6	36 - 72	1 - 2	6	24 - 72	1 - 3	6	40 - 100	2 - 5	6	29 - 58	1 - 2
Canada thistle	CIAR4				6	0 - 192	0 - 8	6	40 - 200	2 - 10	6	0 - 203	0 - 7
cinquefoil	POTEN	6	0 - 36	0 - 1	6	0 - 48	0 - 2	6	0 - 40	0 - 2	6	29 - 58	1 - 2
cocklebur	XANTH2				6	0 - 48	0 - 2	6	0 - 100	0 - 5	6	0 - 29	0 - 1
common dandelion	TAOF				6	24 - 48	1 - 2	6	40 - 80	2 - 4	6	29 - 87	1 - 3
curlycup gumweed	GRSQ				6	0 - 24	0 - 1	6	20 - 60	1 - 3	6	0 - 58	0 - 2
dogbane	APOCY	6	36 - 72	1 - 2	6	0 - 72	0 - 3	6	20 - 60	1 - 3	6	29 - 116	1 - 4
Flodman's thistle	CIFL	6	0 - 36	0 - 1	6	0 - 48	0 - 2	6	0 - 60	0 - 3	6	0 - 58	0 - 2
goldenrod	SOLID	6	36 - 72	1 - 2	6	24 - 72	1 - 3	6	20 - 100	1 - 5	6	29 - 145	1 - 5
Maximilian sunflower	HEMA2	6	36 - 72	1 - 2							6	0 - 29	0 - 1
mint	MENTH	6	0 - 36	0 - 1	6	0 - 24	0 - 1				6	0 - 58	0 - 2
northern bedstraw	GABO2	6	0 - 36	0 - 1	6	0 - 48	0 - 2	6	0 - 40	0 - 2	6	29 - 58	1 - 2
stiff sunflower	HEPA19	6	36 - 72	1 - 2							6	0 - 29	0 - 1
sweetclover	MELIL				6	0 - 192	0 - 8	6	40 - 200	2 - 10	6	29 - 203	1 - 7
western yarrow	ACMIO	6	0 - 72	0 - 2	6	24 - 72	1 - 3	6	20 - 80	1 - 4	6	29 - 87	1 - 3
wood lily	LIPH	6	0 - 36	0 - 1									
other perennial forbs	2FP	6	0 - 108	0 - 3	6	0 - 72	0 - 3	6	0 - 100	0 - 5	6	0 - 58	0 - 2
other annual forbs	2FA				6	0 - 72	0 - 3	6	0 - 100	0 - 5	6	0 - 58	0 - 2
non-native forbs	2FORB				6	0 - 72	0 - 3	6	0 - 100	0 - 5	6	0 - 58	0 - 2
SHRUBS		7	72 - 180	2 - 5	7	24 - 48	1 - 2	7	20 - 60	1 - 3	7	58 - 203	2 - 7
redosier dogwood	COSE16	7	36 - 72	1 - 2							7	29 - 87	1 - 3
chokecherry	PRVI	7	0 - 72	0 - 2	7	0 - 24	0 - 1				7	29 - 87	1 - 3
western snowberry	SYOC	7	36 - 108	1 - 3	7	24 - 48	1 - 2	7	20 - 60	1 - 3	7	58 - 203	2 - 7
other shrubs	2SHRUB	7	0 - 72	0 - 2	7	0 - 48	0 - 2	7	0 - 60	0 - 3	7	0 - 29	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			2555 - 3204 - 3840		1735 - 2220 - 2700		1190 - 1660 - 2110		2105 - 2552 - 2970				
FORBS			175 - 270 - 375		45 - 144 - 250		195 - 300 - 425		140 - 218 - 325				
SHRUBS			70 - 126 - 185		20 - 36 - 50		15 - 40 - 65		55 - 131 - 205				
TOTAL			2800 - 3600 - 4400		1800 - 2400 - 3000		1400 - 2000 - 2600		2300 - 1900 - 3500				

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 probably 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.

Little Bluestem/Big Bluestem 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 and can be found on areas that are grazed and where the grazed plants receive adequate periods of rest during the growing season in order to recover. Historically, fires occurred infrequently. The potential vegetation is about 85 percent grasses and grass-likes, 10 percent forbs, and 5 percent shrubs. Mid and tall warm season grasses dominate this community. The major grasses include little bluestem and big bluestem. Other secondary grasses and grass-likes occurring on the community include western wheatgrass, green needlegrass, switchgrass, Indiangrass, Canada wildrye, sedges, and Baltic rush. Key forbs and shrubs include American licorice, sunflower, aster, goldenrod, and western snowberry.

This plant community is diverse, stable, productive, and is well adapted to the Northern Great Plains. The high water table supplies much of the moisture for plant growth. Plant litter is properly distributed with little movement and natural plant mortality is very low. 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: ND5310

Growth curve name: Missouri Coteau, 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	0	1	28	31	25	10	3	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 *Little Bluestem/Kentucky Bluegrass Plant Community*.
- Non-use and lack of fire will move this plant community to the *Kentucky Bluegrass/Decadent Bluestem, Excessive Litter Plant Community*.

Little Bluestem/Kentucky Bluegrass Plant Community

This plant community results from 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.

Little bluestem and Kentucky bluegrass are the dominant species. Little bluestem is reduced in frequency and production compared to the HCPC, but still remains as a prominent species. Big bluestem, switchgrass, Indiangrass, green needlegrass, and Canada wildrye are greatly reduced. Forb species that have increased include asters, goldenrod, and cinquefoil.

Native plant production and frequency have been reduced. The water cycle, nutrient cycle, and energy flow is slightly reduced but continues 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: 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:

- Heavy continuous grazing without adequate recovery periods between grazing events will move this plant community across an ecological threshold to the *Kentucky Bluegrass Sod, Forbs Plant Community*.
- Prescribed grazing that includes adequate recovery opportunity between grazing occurrences will shift this plant community back to the *Little Bluestem/Big Bluestem Plant Community (HCPC)*.

Kentucky Bluegrass/Decadent Bluestem, Excessive Litter Plant Community

This plant community develops after an extended period of non-use (rest) or exclusion of fire. Eventually litter levels become high enough to reduce native grass vigor, diversity and density. Much of the plant nutrients are tied up in the excessive litter. Organic matter oxidizes in the air rather than being incorporated into the soil due to the absence of animal impact. Typically, bunchgrasses (little bluestem) develop dead centers and rhizomatous grasses form small colonies because of a lack of tiller stimulation.

In advanced stages, Kentucky bluegrass will flourish in a cooler environment and can dominate this plant community. Common forbs include American licorice, cudweed sagewort, and silverleaf scurfpea. Western snowberry will increase in density and cover.

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

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:

- Prescribed grazing or prescribed burning followed by prescribed grazing will move this plant community toward the *Little Bluestem/Big Bluestem Plant Community (HCPC)*. This would require long-term management with prescribed grazing and/or prescribed burning under favorable climatic conditions.

Kentucky Bluegrass Sod, Forbs Plant Community

This plant community developed with heavy continuous grazing without adequate recovery periods between grazing events. Kentucky bluegrass dominates the community and can eventually develop into a thick sod. Baltic rush will most likely increase also. Big bluestem, switchgrass, Indiangrass, and green needlegrass have been removed. Western wheatgrass may persist in trace amounts, greatly reduced in vigor and not readily seen. Western yarrow and goldenrod have increased. Key shrubs have been severely reduced in vigor or removed completely.

This plant community is resistant to change due to grazing tolerance of Kentucky bluegrass. A significant amount of production and diversity has been lost when compared to the HCPC. Loss or reduction of cool season grasses, tall warm season grasses, shrub component have negatively impacted energy flow and nutrient cycling. Water infiltration is reduced significantly due to the massive shallow root system “root pan”, characteristic of sodbound Kentucky bluegrass. It will take a very long time to restore this plant community back to the HCPC with improved management. Renovation would be very costly.

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:

- Long-term prescribed grazing with adequate recovery periods following each grazing event and proper stocking over long periods of time move this plant community toward the *Little Bluestem/Kentucky Bluegrass Plant Community* and may eventually return to the *HCPC* or associated successional plant community stages assuming an adequate seed/vegetative source is available. This process may take greater than 20 years.

Annual/Pioneer Perennial Plant Community

This plant community develops under severe disturbance and/or excessive defoliation. This can result from heavy livestock or wildlife concentration, and cropping abandonment (go-back land). The dominant vegetation includes pioneer annual grasses, forbs, invaders, and early successional biennial and perennial species. Grasses and grass-likes may include Baltic rush, sedge, Kentucky bluegrass, smooth brome grass, and western wheatgrass. The dominant forbs include mare's tail, salsify, kochia, field bindweed, thistles, cinquefoil, western yarrow, and other early successional species. Plant species from adjacent ecological sites may become minor components of this plant community. The community also is susceptible to invasion of other non-native species such as Canada thistle, due to severe soil disturbances and increased 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. Soil erosion is potentially high in this vegetation state. Reduced surface cover, low plant density, low plant vigor, loss of root biomass, and soil compaction, all contribute to decreased water infiltration, increased runoff, and accelerated erosion rates.

Significant economic inputs, management and time would be required to move this plant community toward a higher successional stage and a more productive plant community. Secondary succession is highly variable, depending upon availability and diversity of a viable seed bank of higher successional species within the existing plant community and neighboring plant communities. 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 2,000 lbs./ac. (air-dry weight) depending upon vegetative conditions.

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

- Under long-term prescribed grazing including adequate rest periods, this plant community will move through the successional stages, and may eventually lead to the *Little Bluestem/Big Bluestem Plant Community (HCPC)*. Depending on the slope, aspect, and size, and if adequate perennial plants exist, this change can occur more rapidly. This process will likely take a long period of time (25+ years).
- Range seeding with deferment and prescribed grazing can convert this to a plant community resembling the *Little Bluestem/Big Bluestem Plant Community (HCPC)*.
- Heavy, continuous grazing will lead this plant community towards the *Kentucky Bluegrass Sod, Forbs Plant Community*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Little Bluestem/Big Bluestem Plant Community:

Little Bluestem/Kentucky Bluegrass Plant Community:

Kentucky Bluegrass Sod, Forbs Plant Community:

Kentucky Bluegrass/Decadent Bluestem, Excessive Litter Plant Community:

Annual/Pioneer Perennial Plant Community:

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

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses & Grass-likes							
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
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
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
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
green needlegrass	U P U D	N P N P	U P U D	N P N P	N P N P	U P U D	U P U D
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
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
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
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							
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
anemone	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 N U N
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
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
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
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
northern bedstraw	N N N N	N U D N	N N N N	N U D N	N U D N	N N N N	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
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
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
Shrubs							
chokecherry	D T T D	D T T D	D T T D	P U D P	D U U D	D T T D	P U U P
redosier dogwood	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 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

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

Hydrology Functions

The site is dominated by soils in hydrologic groups B and C. Infiltration and runoff potential for this site varies from negligible to moderate depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75 percent ground cover have the greatest potential for high infiltration and lower runoff. An exception would be where shortgrasses 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

(053BY018ND) – Wet Land
(053BY012ND) – Subirrigated
(053BY011ND) – Loamy

(053BY019ND) – Wet Meadow
(053BY006ND) – Saline Lowland
(053BY015ND) – Thin Loamy

Similar Sites

(053BY012ND) – Subirrigated
[less little bluestem; 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.

State Correlation

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

Field Offices

Aberdeen, SD
Ashley, ND
Bismarck, ND
Bowbells, ND
Ellendale, ND
Faulkton, SD
Garrison, ND

Gettysburg, SD
Ipswich, SD
Jamestown, ND
LaMoure, ND
Leola, SD
Linton, ND
McClusky, ND

Minot, ND
Mohall, ND
Mound City, SD
Napoleon, ND
Redfield, SD
Selby, SD
Stanley, ND

Steele, ND
Towner, ND
Turtle Lake, ND
Watford City, ND
Williston, 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

SD, State Range Management Specialist Date