

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Name: Shallow to Gravel

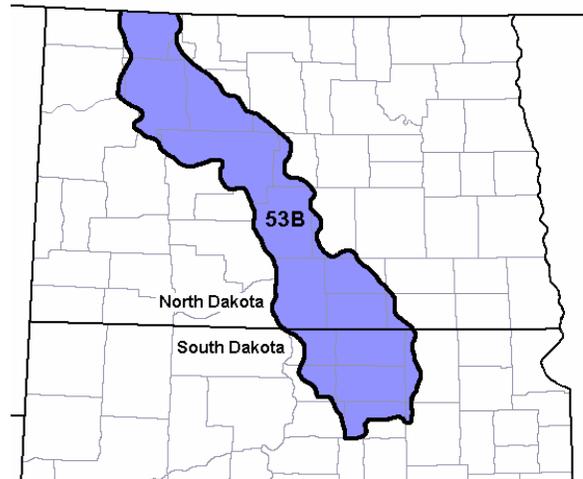
Site Type: Rangeland

Site ID: R053BY010ND

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/.



Physiographic Features

This site occurs on stream terraces and uplands where gravelly sediments are deposited.

Landform: outwash plain, terrace, beach ridge

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	1600	2000
Slope (percent):	0	9
Water Table Depth (inches):	80	80
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

No significant water features influence this site.

Representative Soil Features

These soils are very deep and well to somewhat excessively drained. Soil textures include moderately coarse and medium textured soils over sand or sand and gravel between the depths of 14 to 25 inches. Saturated hydraulic conductivity is moderately rapid to moderate in the upper part and very rapid in the lower part. Available water capacity is moderate in the upper part and low to very low in the lower part. Salinity and sodicity are none. This site occurs on flats, rises, and side slopes on outwash plains and terraces. Slope ranges from 0 to 9 percent. Runoff as evidenced by patterns

of rill, gully, or other water flow is negligible to low, in spite of the slopes, due to the very 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 percent of the plants.

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: alluvium, glaciofluvial deposits

Parent Material Origin: till, sedimentary

Surface Texture: loam

Surface Texture Modifier: none

Subsurface Texture Group: sandy

Surface Fragments ≤3" (% Cover): 0-15

Surface Fragments >3" (%Cover): 0

Subsurface Fragments ≤3" (% Volume): 10-60

Subsurface Fragments >3" (% Volume): 0-25

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	somewhat excessively
Permeability Class:	moderate	moderately rapid
Depth (inches):	80	80
Electrical Conductivity (mmhos/cm)*:	0	0
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	6.6	8.4
Soil Reaction (0.1M CaCl2)*:	NA	NA
Available Water Capacity (inches)*:	4	5
Calcium Carbonate Equivalent (percent)*:	0	20

* - 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 decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments, the site can 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. Sub-climax plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience

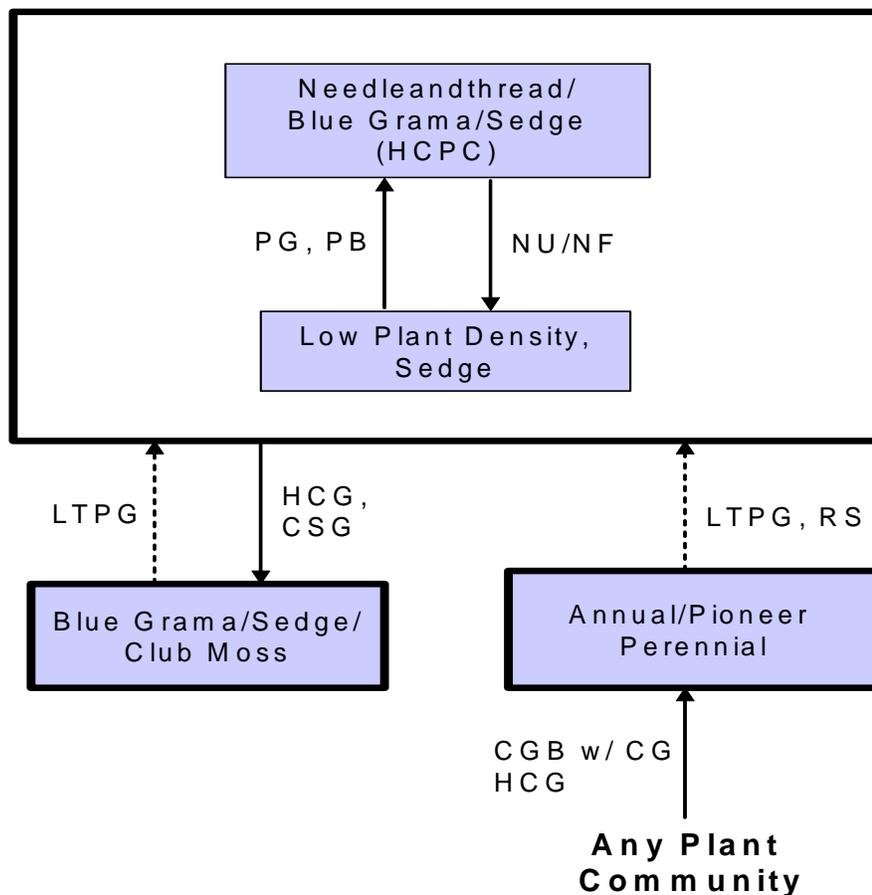
As this site deteriorates, species such as blue grama, sand dropseed, red threeawns, and club moss will increase. Grasses such as little bluestem, needleandthread, green needlegrass, and western wheatgrass will decrease in frequency and production. Perennial forbs increase under poor

management, and if management persists, annual forbs and shrubs will also increase as grasses decrease.

This site is extremely responsive to high moisture years when additional moisture is received during the growing season. The associated coarse textured soils have low moisture holding capability, which generally limits plant growth. With additional moisture, the interpretive plant community can significantly increase its production when compared to the production of a normal year.

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



CGB w/ CG – Cropped go-back with continuous grazing; **CSG** – Continuous seasonal grazing; **HCG** – Heavy continuous grazing; **HCPC** – Historical Climax Plant Community; **LTPG** – Long-term prescribed grazing; **NU/NF** – Extended period of non-use & no fire; **PB** – Prescribed burning; **PG** – Prescribed grazing; **RS** – Range seeding followed by prescribed grazing.

Plant Community Composition and Group Annual Production

		Needleandthread/Blue Grama/ Sedge (HCPC)		
COMMON/GROUP NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES			1280 - 1440	80 - 90
needleandthread	HECOC8	1	320 - 480	20 - 30
blue grama	BOGR2	2	80 - 208	5 - 13
western wheatgrass	PASM	3	80 - 160	5 - 10
plains muhly	MUCU3	4	48 - 128	3 - 8
NEEDLEGRASS		5	48 - 128	3 - 8
green needlegrass	NAVI4	5	48 - 128	3 - 8
porcupine grass	HESP11	5	48 - 128	3 - 8
OTHER NATIVE GRASSES		6	80 - 160	5 - 10
red threawn	ARPUL	6	16 - 48	1 - 3
sand dropseed	SPCR	6	16 - 32	1 - 2
prairie dropseed	SPHE	6	0 - 48	0 - 3
little bluestem	SCSC	6	16 - 80	1 - 5
prairie junegrass	KOMA	6	16 - 32	1 - 2
other perennial grasses	2GP	6	0 - 16	0 - 1
GRASS-LIKES		7	80 - 160	5 - 10
threadleaf sedge	CAFI	7	32 - 128	2 - 8
other grass-likes	2GL	7	32 - 80	2 - 5
FORBS		7	32 - 80	2 - 5
American pasqueflower	PUPA5	7	0 - 16	0 - 1
blanketflower	GAAR	7	0 - 16	0 - 1
cudweed sagewort	ARLU	7	16 - 32	1 - 2
cutleaf ironplant	MAPI	7	16 - 32	1 - 2
gayfeather	LIATR	7	16 - 32	1 - 2
goldenrod	SOLID	7	16 - 48	1 - 3
green sagewort	ARDR4	7	16 - 32	1 - 2
heath aster	SYER	7	16 - 32	1 - 2
Hood's phlox	PHHO	7	0 - 16	0 - 1
milkvetch	ASTRA	7	0 - 16	0 - 1
prairie clover	DALEA	7	16 - 48	1 - 3
prairie coneflower	RACO3	7	16 - 32	1 - 2
purple coneflower	ECAN2	7	16 - 32	1 - 2
pussytoes	ANTEN	7	0 - 16	0 - 1
rush skeletonweed	LYJU	7	0 - 16	0 - 1
scarlet gaura	GACO5	7	16 - 32	1 - 2
scarlet globemallow	SPCO	7	16 - 32	1 - 2
scurfpea	PSORA2	7	16 - 32	1 - 2
wild onion	ALLIU	7	0 - 16	0 - 1
other perennial forbs	2FP	7	16 - 32	1 - 2
other annual forbs	2FA	7	0 - 32	0 - 2
SHRUBS		8	32 - 80	2 - 5
broom snakeweed	GUSA2	8	0 - 16	0 - 1
purple pincushion	ESVIV	8	0 - 16	0 - 1
fringed sagewort	ARFR4	8	16 - 32	1 - 2
rose	ROSA5	8	16 - 32	1 - 2
western snowberry	SYOC	8	0 - 16	0 - 1
other shrubs	2SHRUB	8	0 - 16	0 - 1
CRYPTOGAMS		9	0 - 16	0 - 1
clubmoss	SEDE2	9	0 - 16	0 - 1

Annual Production lbs./acre	LOW	RV	HIGH
GRASSES & GRASS-LIKES	740	1480	-1910
FORBS	30	56	-85
SHRUBS	30	56	-85
CRYPTOGAMS	0	8	-20
TOTAL	800	1600	-2100

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	Needleandthread/Blue Grama/ Sedge (HCPC)			Blue Grama/Sedge/Club Moss			Low Plant Density, Sedge					
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp			
GRASSES & GRASS-LIKES													
needleandthread	HECOC8	1	320 - 480	20 - 30	1	8 - 64	1 - 8	1	24 - 144	2 - 12			
blue grama	BOGR2	2	80 - 208	5 - 13	2	40 - 160	5 - 20	2	12 - 60	1 - 5			
western wheatgrass	PASM	3	80 - 160	5 - 10	3	8 - 40	1 - 5	3	24 - 96	2 - 8			
plains muhly	MUCU3	4	48 - 128	3 - 8				4	0 - 24	0 - 2			
NEEDLEGRASS													
green needlegrass	NAVI4	5	48 - 128	3 - 8	5	0 - 32	0 - 4	5	12 - 60	1 - 5			
porcupine grass	HESP11	5	48 - 128	3 - 8	5	0 - 32	0 - 4	5	0 - 36	0 - 3			
OTHER NATIVE GRASSES													
red threeawn	ARPUL	6	16 - 48	1 - 3	6	8 - 40	1 - 5	6	24 - 120	2 - 10			
sand dropseed	SPCR	6	16 - 32	1 - 2	6	8 - 40	1 - 5	6	12 - 60	1 - 5			
prairie dropseed	SPHE	6	0 - 48	0 - 3				6	0 - 24	0 - 2			
little bluestem	SCSC	6	16 - 80	1 - 5	6	0 - 16	0 - 2	6	0 - 48	0 - 4			
prairie junegrass	KOMA	6	16 - 32	1 - 2	6	0 - 16	0 - 2	6	12 - 24	1 - 2			
other perennial grasses	ZGP	6	0 - 48	0 - 3	6	0 - 24	0 - 3	6	0 - 60	0 - 5			
GRASS-LIKES													
threadleaf sedge	CAFI	7	32 - 128	2 - 8	7	40 - 120	5 - 15	7	120 - 240	10 - 20			
other grass-likes	ZGL	7	32 - 80	2 - 5	7	16 - 48	2 - 6	7	24 - 96	2 - 8			
NON-NATIVE GRASSES													
Kentucky bluegrass	POPR				8	16 - 80	2 - 10	8	60 - 180	5 - 15			
smooth bromegrass	BRIN2				8	0 - 48	0 - 6	8	0 - 120	0 - 10			
crested wheatgrass	AGCR				8	0 - 24	0 - 3	8	0 - 36	0 - 3			
cheatgrass	BRTE				8	0 - 40	0 - 5	8	0 - 96	0 - 8			
FORBS													
American pasqueflower	PUPA5	9	0 - 16	0 - 1	9	0 - 16	0 - 2	9	0 - 12	0 - 1			
blanketflower	GAAR	9	0 - 16	0 - 1				9	0 - 12	0 - 1			
common dandelion	TAOF				9	8 - 24	1 - 3	9	12 - 48	1 - 4			
cudweed sagewort	ARLU	9	16 - 32	1 - 2	9	8 - 24	1 - 3	9	12 - 48	1 - 4			
cutleaf ironplant	MAPI	9	16 - 32	1 - 2	9	0 - 16	0 - 2	9	0 - 12	0 - 1			
gayfeather	LIATR	9	16 - 32	1 - 2	9	8 - 16	1 - 2	9	12 - 24	1 - 2			
goldenrod	SOLID	9	16 - 48	1 - 3	9	8 - 24	1 - 3	9	12 - 36	1 - 3			
green sagewort	ARDR4	9	16 - 32	1 - 2	9	8 - 24	1 - 3	9	12 - 60	1 - 5			
heath aster	SYER	9	16 - 32	1 - 2	9	8 - 24	1 - 3	9	12 - 48	1 - 4			
Hood's phlox	PHHO	9	0 - 16	0 - 1	9	0 - 8	0 - 1	9	0 - 12	0 - 1			
milkvetch	ASTRA	9	0 - 16	0 - 1	9	0 - 8	0 - 1	9	0 - 12	0 - 1			
prairie clover	DALEA	9	16 - 48	1 - 3	9	8 - 16	1 - 2	9	0 - 12	0 - 1			
prairie coneflower	RACO3	9	16 - 32	1 - 2	9	8 - 16	1 - 2	9	12 - 24	1 - 2			
purple coneflower	ECAN2	9	16 - 32	1 - 2	9	0 - 16	0 - 2	9	0 - 12	0 - 1			
pussytoes	ANTEN	9	0 - 16	0 - 1	9	0 - 8	0 - 1						
rush skeletonweed	LYJU	9	0 - 16	0 - 1	9	0 - 8	0 - 1	9	0 - 12	0 - 1			
scarlet gaura	GACO5	9	16 - 32	1 - 2				9	0 - 12	0 - 1			
scarlet globemallow	SPCO	9	16 - 32	1 - 2	9	8 - 16	1 - 2	9	12 - 24	1 - 2			
scurpea	PSORA2	9	16 - 32	1 - 2	9	8 - 24	1 - 3	9	12 - 36	1 - 3			
sweetclover	MELIL				9	0 - 40	0 - 5	9	0 - 96	0 - 8			
western salsify	TRDU				9	0 - 24	0 - 3	9	0 - 60	0 - 5			
wild onion	ALLIU	9	0 - 16	0 - 1									
other perennial forbs	ZFP	9	16 - 48	1 - 3	9	8 - 40	1 - 5	9	12 - 60	1 - 5			
other annual forbs	ZFA	9	0 - 32	0 - 2	9	8 - 40	1 - 5	9	12 - 60	1 - 5			
SHRUBS													
broom snakeweed	GUSA2	10	0 - 16	0 - 1	10	0 - 24	0 - 3	10	0 - 24	0 - 2			
cactus	OPUNT	10	0 - 32	0 - 2	10	8 - 32	1 - 4	10	0 - 36	0 - 3			
fringed sagewort	ARFR4	10	16 - 32	1 - 2	10	8 - 32	1 - 4	10	12 - 36	1 - 3			
purple pincushion	ESVIV	10	0 - 16	0 - 1	10	0 - 8	0 - 1	10	0 - 12	0 - 1			
rose	ROSA5	10	16 - 32	1 - 2	10	8 - 32	1 - 4	10	12 - 36	1 - 3			
western snowberry	SYOC	10	0 - 16	0 - 1	10	0 - 24	0 - 3	10	0 - 36	0 - 3			
other shrubs	ZSHRUB	10	0 - 16	0 - 1	10	0 - 8	0 - 1	10	0 - 12	0 - 1			
CRYPTOGAMS													
clubmoss	SEDE2	11	0 - 16	0 - 1	11	16 - 80	2 - 10	11	12 - 36	1 - 3			
Annual Production lbs./acre			LOW	RV	HIGH		LOW	RV	HIGH		LOW	RV	HIGH
GRASSES & GRASS-LIKES			740	1480	1910		315	632	1145		725	1050	1370
FORBS			30	56	85		35	60	85		55	90	125
SHRUBS			30	56	85		35	60	85		10	36	65
CRYPTOGAMS			0	8	20		15	48	85		10	24	40
TOTAL			800	1600	2100		400	800	1400		800	1200	1600

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. 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 considered “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 these communities is to capture the current knowledge and experience at the time of this revision.

Needleandthread/Blue Grama/Sedge Plant Community

This is the interpretive plant community and is considered to be the HCPC. This community evolved with grazing by large herbivores and occasional prairie fire. It is well suited for grazing by domestic livestock and can be found on areas that are properly managed with prescribed grazing that allows for proper utilization, changes in season of use and adequate recovery periods following each grazing event. The potential vegetation is about 89 percent grasses or grass-like plants, 5 percent forbs, 5 percent shrubs, and 1 percent cryptogams.

The major grasses and grass-likes include needleandthread, blue grama, western wheatgrass, green needlegrass, porcupine grass, plains muhly, and sedge. Other grasses occurring on this plant community include sand dropseed, prairie Junegrass, little bluestem, and prairie dropseed.

This plant community is 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: ND5303

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

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

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	6	21	40	20	6	4	1	0	0

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

- Heavy, continuous grazing or continuous seasonal (early) grazing will convert the plant community to the *Blue Grama/Sedge/Club Moss Plant Community*.
- Non-use and no fire for extended periods will cause this plant community to shift to the *Low Plant Density, Sedge Plant Community*.
- Cropped go-back land with continuous grazing will move this plant community to the *Annual/Pioneer Perennial Plant Community*.

Blue Grama/Sedge/Club Moss Plant Community

This plant community is found close to watering facilities under continuous, summer long grazing with moderate grazing pressure, or pasture wide under heavy grazing use. Blue grama, sedge, and club

moss are significant components of this plant community. Warm-season grasses make up the majority of the plants with the balance made up of perennial forbs, sedges, and shrubs.

The potential vegetation is about 65 percent grasses or grass-like plants, 10 percent forbs, 15 percent shrubs, and 10 percent cryptogams. Dominant grasses and grass-likes include blue grama, sedge, sand dropseed, and threeawn. Grasses of secondary importance include needleandthread and prairie Junegrass. Forbs commonly found in this plant community include western ragweed, sageworts, cutleaf ironplant, and goldenrod. The significant shrubs include fragile cactus, broom snakeweed, common pricklypear, and fringed sagewort.

When compared to the HCPC, blue grama, sedge, and club moss have increased. Needlegrass, western wheatgrass, little bluestem, and plains muhly have decreased, and production of cool and warm-season grasses has also been reduced. A dense sod of club moss can become prevalent on this plant community. Club moss occupies bare soil areas within deteriorated plant communities due to long-term repeated disturbances. Club moss creates a more arid microclimate, resulting in extreme competition for available moisture. Vigor and production of other species is reduced dramatically. Initial runoff rates are low but then increase as club moss becomes saturated. Once the club moss layer is saturated, runoff increases and infiltration decreases as compared to the HCPC. Soil erosion is minimal.

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: ND5305

Growth curve name: Missouri Coteau, warm-season dominant.

Growth curve description: Warm-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	1	4	18	36	29	10	2	0	0	0

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

- Long-term prescribed grazing with adequate rest may move this plant community through successional stages, and eventually shift this it to the *Needleandthread/Blue Grama/Sedge Plant Community*.
- Heavy, continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.
- Cropped go-back land with continuous grazing will move this plant community to the *Annual/Pioneer Perennial Plant Community*.

Low Plant Density, Sedge Plant Community

This plant community develops after an extended period of 15 or more years of non-use by herbivores and exclusion of fire. This plant community is dispersed throughout the pasture, encircling spot grazed areas, and areas distant from water sources. This is a typical pattern found in properly stocked pastures grazed season-long. Plant litter may accumulate as this plant community first develops. Due to a lack of tiller stimulation and sunlight, native bunchgrasses typically develop dead centers and native rhizomatous grasses are limited to colonies. Standing decadent plants and moderate litter covers shorter understory species (i.e., short grasses and sedges), restricting their ability to capture adequate sunlight for photosynthesis. Vigor and diversity of native plants are

reduced. Annual and/or biennial forbs and annual grasses commonly fill interspaces once occupied by desirable species.

Initially, species such as sedge, sand dropseed, and threeawn will dominate this plant community. Eventually, species such as Kentucky bluegrass, smooth brome grass, cheatgrass, and sweet clover tend to invade and may dominate this plant community. Other grasses present include western wheatgrass, needleandthread, and green needlegrass. The common forbs include green sagewort, cudweed, and heath aster. Fringed sagewort and brome snakeweed are the principal shrubs.

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. Runoff is similar to the HCPC. Once this plant community is reached, any of the preferred treatments can readily return the diversity and production of the site.

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

Growth curve number: ND5301

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

Growth curve description: Cool-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	8	24	45	10	3	5	2	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 *Needleandthread/Blue Grama/Sedge Plant Community*. This would require long-term management with prescribed grazing and/or prescribed burning under controlled conditions.

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. Species may include red threeawn, sixweeks fescue, smooth brome grass, club moss, annual brome, needleandthread, green needlegrass, prairie Junegrass, western wheatgrass, and little bluestem. The dominant forbs include curlycup gumweed, maretail, salsify, kochia, field bindweed, thistles, western ragweed, pussytoes, prostrate verbena, and other early successional species. Shrubs that may be present include prairie rose and broom snakeweed. The community also susceptible to invasion by non-native species due to severe soil disturbances and relatively high percent of bare ground. Compared to the HCPC, most of the native perennial grasses have been eliminated or occur in very small amounts. 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. 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.

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 a plant community resembling the *Needleandthread/Blue Grama/Sedge Plant Community (HCPC)*. This process will likely take a long period of time (50+ years). Depending on the slope, aspect, and size, and if adequate perennial plants exist, this change can occur more rapidly.
- Range seeding with deferment and prescribed grazing can convert this to a plant community closely resembling the *Needleandthread/Blue Grama/Sedge Plant Community (HCPC)*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Needleandthread/Blue Grama/Sedge Plant Community:

Blue Grama/Sedge/Club Moss Plant Community:

Low Plant Density, Sedge 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							
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
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
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 muhly	U U D U	U U D U	U U D U	N N N N	N N N N	U U D U	U U 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
prairie dropseed	N U P U	N U D U	N U P U	N U D U	N U D U	N U P U	N U P U
prairie junegrass	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
red threeawn	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
sand dropseed	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
threadleaf 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
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 pasqueflower	N N N N	N U N N	N N N N	N U N N	N U N N	N N N N	N N N N
blanketflower	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
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
cutleaf ironplant	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
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
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
green sagewort	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
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
Hood's phlox	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
milkvetch	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 U
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
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
purple 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
pussytoes	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
rush skeletonweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
scarlet gaura	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
scarlet globemallow	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U D D U
scurfpea	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
wild 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
Shrubs							
broom snakeweed	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	U U U U
fringed sagewort	U U U U	U U U U	U U U U	U D D U	U P P D	U U U U	U U U D
purple pincushion	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
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
Cryptogams							
clubmoss	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

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

Water is the principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic groups A and B. Infiltration varies from moderately rapid to rapid and runoff potential varies from negligible to medium for this site depending on soil hydrologic group, slope, 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 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

None noted.

Supporting Information

Associated Sites

(053BY011ND) – Loamy

(053BY008ND) – Sandy

(053BY017ND) – Very Shallow

Similar Sites

(053BY017ND) – Very Shallow (VS)

[Excessively well drained soils less than 10 inches to scoria, gravels, shales, siltstone, or sandstone bedrock that restricts root penetration, upslope of Shallow loamy site. Indicator species are blue grama, sideoats grama, purple coneflower, pasqueflower, and creeping juniper. This site has similar species but more needleandthread, blue grama, and less plains muhly, green needlegrass, western wheatgrass, restrictive layer above 10 inches is scoria or gravels, less 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

Site Type: Rangeland
MLRA: 53B – Central Dark Brown Glaciated Plains

Shallow to Gravel
R053BY010ND

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	1968 – 1969	ND	Burke

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

Counties

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

Field Offices

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

Counties

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