

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Thin Upland

**Site ID:** R066XY059NE

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



### Physiographic Features

This site generally occurs on steep shoulders or backslopes of hills and plains.

**Landform:** hill, plain, knoll, ridge

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1900	3000
<b>Slope (percent):</b>	11	40
<b>Water Table Depth (inches):</b>	None	None
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>	None	None
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Medium	High

### Climatic Features

MLRA 66 is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature may also abound. The climate is the result of this MLRA's location near the geographic center of North America. There are few natural barriers on the Northern Great Plains and the winds move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 18 to 25 inches per year. The normal average annual temperature is about 48°F. January is the coldest month with average temperatures ranging from about 19°F (Bonesteel, South Dakota (SD)), to about 23°F (Ainsworth, Nebraska (NE)). July is the warmest month with temperatures averaging from about 73°F (Harrington, SD), to about 75°F (Gregory, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 54°F. This large annual range attests to the continental nature of this area's climate. Hourly winds average about 10 miles per hour annually, ranging from about 11 miles per hour during the spring to about 9 miles per hour during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

Growth of native cool-season plants begins mid to late March and continues to late June. Native warm-season plants begin growth in early May and continue to late August. Green up of cool-season plants may occur in September and October when adequate soil moisture is present.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	127	154
Freeze-free period (days):	144	173
Mean Annual Precipitation (inches):	18	25

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

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

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

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

**Influencing Water Features**

No significant water features influence this site.

**Representative Soil Features**

The features common to all soils in this site are the silt loam textured surface layers and slopes of 11 to 40 percent. The soils in this site are well drained and formed in calcareous loess, soft siltstone, or loamy alluvium and residuum. The surface layer is five to six inches thick. The texture of the subsurface layers ranges from loam to silt loam. The soils have a moderate infiltration rate. These soils are typically calcareous at or near the surface; however, carbonates are not always distinguishable in the upper layers. The soil profile should show evidence of weak development (i.e., thin A horizon, pale colors, lack of argillic horizon). This site should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance, or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact.

These soils are susceptible to wind and water erosion. The hazard of water erosion increases on slopes greater than about 15 percent. Loss of 50 percent or more of the surface layer of the soils on this site can result in a shift in species composition and/or production.

More information can be found in the various soil survey reports. Contact the local United States Department of Agriculture (USDA) service center for soil survey reports that include core detail specific to your location.

**Parent Material Kind:** calcareous loess, residuum

**Parent Material Origin:** mixed

**Surface Texture:** silt loam

**Surface Texture Modifier:** none

**Subsurface Texture Group:** loamy

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

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

**Subsurface Fragments  $\leq 3''$  (% Volume):** 0-5

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

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	well	well
<b>Permeability Class:</b>	moderately slow	moderate
<b>Depth (inches):</b>	20	80
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	2
<b>Sodium Absorption Ratio*:</b>	0	0
<b>Soil Reaction (1:1 Water)*:</b>	7.4	8.4
<b>Soil Reaction (0.1M CaCl<sub>2</sub>)*:</b>	NA	NA
<b>Available Water Capacity (inches)*:</b>	6	8
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	15

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

## Plant Communities

### Ecological Dynamics of the Site:

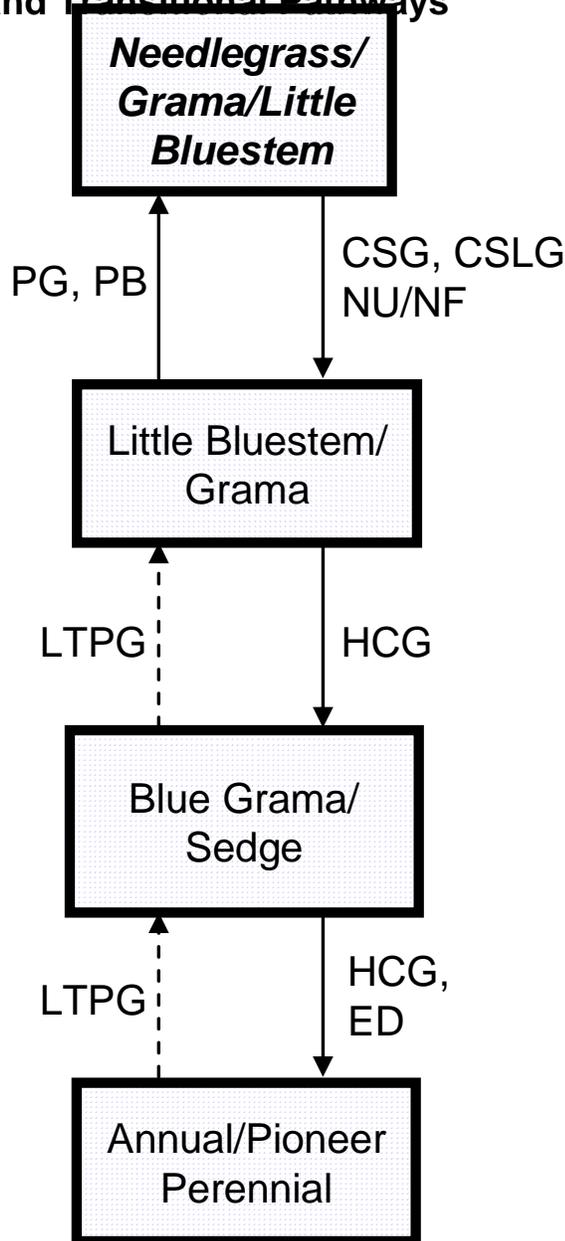
The interpretive plant community developed under Northern Great Plains climatic conditions, and included natural influence of large herbivores and occasional fire. Changes will occur in the plant communities due to management actions and/or climatic conditions.

Encroachment of ponderosa pine, Rocky Mountain juniper, and eastern redcedar may occur from associated sites, and can shift site characteristics. These shifts can alter the site dynamics and potential. These species may occur in small amounts on several plant communities.

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

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways between communities. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

### Plant Communities and Transitional Pathways



**CSG** – Continuous seasonal grazing; **CSLG** – Continuous season-long grazing; **ED** – Excessive disturbance; **HCG** – Heavy continuous grazing; **LTPG** – Long-term prescribed grazing; **NU/NF** – Extended period of non-use & no fire; **PB** – Prescribed burning followed by prescribed grazing; **PG** – Prescribed grazing.

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Needlegrass/Little Bluestem/Grama		
			Group	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>				1725 - 1955	75 - 85
little bluestem	Schizachyrium scoparium	SCSC	1	230 - 690	10 - 30
sideoats grama	Bouteloua curtipendula	BOCU	2	115 - 460	5 - 20
<b>NEEDLEGRASS</b>			<b>3</b>	<b>230 - 345</b>	<b>10 - 15</b>
needleandthread	Hesperostipa comata ssp. comata	HECOC8	3	115 - 345	5 - 15
porcupine grass	Hesperostipa spartea	HESP11	3	115 - 345	5 - 15
green needlegrass	Nassella viridula	NAVI4	3	0 - 230	0 - 10
<b>SHORT WARM-SEASON</b>			<b>4</b>	<b>230 - 460</b>	<b>10 - 20</b>
blue grama	Bouteloua gracilis	BOGR2	4	230 - 460	10 - 20
hairy grama	Bouteloua hirsuta	BOHI2	4	0 - 115	0 - 5
buffalograss	Bouteloua dactyloides	BODA2	4	0 - 115	0 - 5
<b>NATIVE GRASSES/GRASS-LIKES</b>			<b>5</b>	<b>230 - 690</b>	<b>10 - 30</b>
sedge	Carex spp.	CAREX	5	115 - 230	5 - 10
big bluestem	Andropogon gerardii	ANGE	5	0 - 345	0 - 15
prairie junegrass	Koeleria macrantha	KOMA	5	23 - 115	1 - 5
western wheatgrass	Pascopyrum smithii	PASM	5	115 - 345	5 - 15
other perennial grasses		2GP	5	0 - 69	0 - 3
<b>FORBS</b>			<b>7</b>	<b>115 - 345</b>	<b>5 - 15</b>
cudweed sagewort	Artemisia ludoviciana	ARLU	7	23 - 92	1 - 4
dalea	Dalea spp.	DALEA	7	23 - 115	1 - 5
dotted gayfeather	Liatris punctata	LIPU	7	46 - 115	2 - 5
false boneset	Brickellia eupatorioides	BREU	7	0 - 115	0 - 5
green sagewort	Artemisia dracunculus	ARDR4	7	0 - 115	0 - 5
heath aster	Symphyotrichum ericoides	SYER	7	0 - 46	0 - 2
milkvetch	Astragalus spp.	ASTRA	7	23 - 115	1 - 5
purple coneflower	Echinacea angustifolia	ECAN2	7	46 - 230	2 - 10
purple prairie clover	Dalea purpurea	DAPU5	7	0 - 46	0 - 2
pussytoes	Antennaria spp.	ANTEN	7	0 - 46	0 - 2
scarlet gaura	Gaura coccinea	GACO5	7	23 - 69	1 - 3
scarlet globemallow	Sphaeralcea coccinea	SPCO	7	23 - 115	1 - 5
scurfpea	Psoralea spp.	PSORA2	7	0 - 46	0 - 2
thistle	Cirsium spp.	CIRSI	7	0 - 23	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	7	23 - 115	1 - 5
wild onion	Allium spp.	ALLIU	7	0 - 23	0 - 1
other perennial forbs		2FP	7	0 - 46	0 - 2
other annual forbs		2FA	7	0 - 23	0 - 1
<b>SHRUBS</b>			<b>8</b>	<b>115 - 230</b>	<b>5 - 10</b>
catclaw sensitive briar	Mimosa nuttallii	MINU6	8	23 - 46	1 - 2
dwarf false indigo	Amorpha nana	AMNA	8	0 - 46	0 - 2
fringed sagewort	Artemisia frigida	ARFR4	8	46 - 115	2 - 5
leadplant	Amorpha canescens	AMCA6	8	0 - 115	0 - 5
rose	Rosa spp.	ROSA5	8	0 - 115	0 - 5
skunkbush sumac	Rhus trilobata	RHTR	8	0 - 46	0 - 2
yucca	Yucca glauca	YUGL	8	0 - 69	0 - 3
other shrubs		2SHRUB	8	0 - 69	0 - 3
<b>Annual Production lbs./acre</b>			<b>LOW</b>	<b>RV</b>	<b>HIGH</b>
<b>GRASSES &amp; GRASS-LIKES</b>			1580 -	1898 -	2175
<b>FORBS</b>			110 -	230 -	375
<b>SHRUBS</b>			110 -	173 -	250
<b>TOTAL</b>			1800 -	2300 -	2800

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	Needlegrass/Little Bluestem/Grama			Little Bluestem/Grama			Blue Grama/Sedge			Annual/Pioneer Perennial		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>													
little bluestem	SCSC	1	230 - 690	10 - 30	1	570 - 1045	30 - 55	1	10 - 100	1 - 10	1	0 - 120	0 - 15
sideoats grama	BOCU	2	115 - 460	5 - 20	2	19 - 190	1 - 10	2	10 - 50	1 - 5	2		
<b>NEEDLEGRASS</b>													
needleandthread	HECOC8	3	115 - 345	5 - 15	3	0 - 95	0 - 5	3	0 - 50	0 - 5	3		
porcupine grass	HESP11	3	115 - 345	5 - 15	3	0 - 19	0 - 1						
green needlegrass	NAVI4	3	0 - 230	0 - 10	3	0 - 19	0 - 1						
<b>SHORT WARM-SEASON</b>													
blue grama	BOGR2	4	230 - 460	10 - 20	4	285 - 665	15 - 35	4	200 - 400	20 - 40	4	0 - 40	0 - 5
hairy grama	BOHI2	4	0 - 115	0 - 5	4	0 - 190	0 - 10	4	0 - 100	0 - 10	4	0 - 16	0 - 2
buffalograss	BODA2	4	0 - 115	0 - 5	4	0 - 190	0 - 10	4	0 - 100	0 - 10	4	0 - 16	0 - 2
<b>NATIVE GRASSES/GRASS-LIKES</b>													
sedge	CAREX	5	115 - 230	5 - 10	5	190 - 285	10 - 15	5	150 - 250	15 - 25	5	0 - 16	0 - 2
big bluestem	ANGE	5	0 - 345	0 - 15	5	0 - 57	0 - 3						
prairie junegrass	KOMA	5	23 - 115	1 - 5	5	0 - 57	0 - 3	5	0 - 30	0 - 3			
western wheatgrass	PASM	5	115 - 345	5 - 15	5	0 - 57	0 - 3	5	0 - 50	0 - 5	5	0 - 40	0 - 5
threeawn	ARIST				5	0 - 95	0 - 5	5	20 - 100	2 - 10	5	0 - 280	0 - 35
dropseed	SPORO				5	0 - 95	0 - 5	5	10 - 50	1 - 5	5	0 - 160	0 - 20
other perennial grasses	2GP	5	0 - 69	0 - 3	5	0 - 57	0 - 3	5	0 - 30	0 - 3	5	0 - 40	0 - 5
<b>NON-NATIVE GRASSES</b>													
cheatgrass	BRTE				6	0 - 57	0 - 3	6	0 - 80	0 - 8	6	0 - 160	0 - 20
bluegrass	POA				6	0 - 57	0 - 3	6	0 - 150	0 - 15			
<b>FORBS</b>													
cudweed sagewort	ARLU	7	115 - 345	5 - 15	7	95 - 190	5 - 10	7	50 - 150	5 - 15	7	40 - 200	5 - 25
curlycup gumweed	GRSQ				7	38 - 114	2 - 6	7	10 - 40	1 - 4	7	0 - 24	0 - 3
dalea	DALEA	7	23 - 115	1 - 5	7	0 - 57	0 - 3						
deathcamas	ZIGAD										7	0 - 40	0 - 5
dotted gayfeather	LIPU	7	46 - 115	2 - 5	7	0 - 57	0 - 3	7	0 - 20	0 - 2			
false boneset	BREU	7	0 - 115	0 - 5	7	0 - 57	0 - 3						
green sagewort	ARDR4	7	0 - 115	0 - 5	7	19 - 114	1 - 6	7	10 - 60	1 - 6	7	0 - 24	0 - 3
heath aster	SYER	7	0 - 46	0 - 2	7	19 - 95	1 - 5	7	20 - 60	2 - 6			
milkvetch	ASTRA	7	23 - 115	1 - 5	7	19 - 38	1 - 2	7	20 - 40	2 - 4	7	0 - 16	0 - 2
purple coneflower	ECAN2	7	46 - 230	2 - 10	7	38 - 95	2 - 5	7	20 - 80	2 - 8			
purple prairie clover	DAPU5	7	0 - 46	0 - 2	7	0 - 19	0 - 1						
pussytoes	ANTEN	7	0 - 46	0 - 2	7	0 - 19	0 - 1	7	0 - 50	0 - 5	7	0 - 8	0 - 1
scarlet gaura	GACO5	7	23 - 69	1 - 3	7	0 - 57	0 - 3	7	10 - 50	1 - 5			
scarlet globemallow	SPCO	7	23 - 115	1 - 5	7	19 - 57	1 - 3	7	10 - 30	1 - 3			
scurfpea	PSORA2	7	0 - 46	0 - 2	7	0 - 38	0 - 2	7	0 - 30	0 - 3			
thistle	CIRSI	7	0 - 23	0 - 1	7	0 - 38	0 - 2	7	0 - 30	0 - 3	7	0 - 64	0 - 8
verbena	VERBE							7	0 - 20	0 - 2	7	0 - 40	0 - 5
western ragweed	AMPS	7	23 - 115	1 - 5	7	19 - 114	1 - 6	7	20 - 60	2 - 6	7	0 - 40	0 - 5
wild onion	ALLIU	7	0 - 23	0 - 1	7	0 - 19	0 - 1	7	0 - 10	0 - 1	7	0 - 8	0 - 1
other perennial forbs	2FP	7	0 - 46	0 - 2	7	0 - 38	0 - 2	7	0 - 20	0 - 2	7	0 - 40	0 - 5
other annual forbs	2FA	7	0 - 23	0 - 1	7	0 - 19	0 - 1	7	0 - 20	0 - 2	7	0 - 40	0 - 5
<b>SHRUBS</b>													
catclaw sensitive briar	MINU6	8	115 - 230	5 - 10	8	95 - 190	5 - 10	8	50 - 100	5 - 10	8	0 - 120	0 - 15
dwarf false indigo	AMNA	8	0 - 46	0 - 2	8	0 - 19	0 - 1						
fringed sagewort	ARFR4	8	46 - 115	2 - 5	8	57 - 114	3 - 6	8	30 - 100	3 - 10	8	0 - 120	0 - 15
leadplant	AMCA6	8	0 - 115	0 - 5	8	0 - 38	0 - 2						
rose	ROSA5	8	0 - 115	0 - 5	8	0 - 95	0 - 5	8	0 - 20	0 - 2	8	0 - 40	0 - 5
skunkbush sumac	RHTR	8	0 - 46	0 - 2	8	0 - 38	0 - 2	8	0 - 20	0 - 2			
yucca	YUGL	8	0 - 69	0 - 3	8	0 - 76	0 - 4	8	0 - 50	0 - 5			
other shrubs	2SHRUB	8	0 - 69	0 - 3	8	0 - 57	0 - 3	8	0 - 30	0 - 3	8	0 - 80	0 - 10
<b>Annual Production lbs./acre</b>													
		LOW	RV	HIGH	LOW	RV	HIGH	LOW	RV	HIGH	LOW	RV	HIGH
<b>GRASSES &amp; GRASS-LIKES</b>		1580	1898	-2175	1120	1615	-2010	410	825	-1140	365	620	-1070
<b>FORBS</b>		110	230	-375	90	143	-195	45	100	-155	35	120	-205
<b>SHRUBS</b>		110	173	-250	90	143	-195	45	75	-105	0	60	-125
<b>TOTAL</b>		1800	2300	-2800	1300	1900	-2400	500	1000	-1400	400	800	-1400

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

### Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data are collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities (DPC).” According to the USDA Natural Resources Conservation Service (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.

#### Needlegrass/Grama/Little Bluestem Plant Community

Interpretations are primarily based on the Needlegrass/Grama/Little Bluestem Plant Community, which is also considered climax. This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest. The potential vegetation is about 75 percent grasses or grass-like plants, 15 percent forbs, and 10 percent shrubs. The plant community is dominated by a mixture of cool- and warm-season grasses.

The major grasses include little bluestem, needleandthread, sideoats grama, and blue grama. Other grasses and grass-likes occurring include sedge, western wheatgrass, green needlegrass, and prairie junegrass. Significant forbs include purple coneflower, dotted gayfeather, and prairie clover. Significant shrubs found in this plant community include sagewort, rose, and yucca. Refer to the plant community composition and group annual production table for species composition and production.

This plant community is extremely resilient and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. Community dynamics, nutrient cycle, water cycle, and energy flow are functioning properly. Plant litter is properly distributed with very little movement offsite and natural plant mortality is very low. The diversity in plant species allows for high drought tolerance.

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: NE6637

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

Growth curve description: Warm-season dominant, cool-season subdominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	15	24	23	15	5	5	0	0

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

- Continuous seasonal grazing (early season grazing with high stock densities results in increased soil disturbance and favors the little bluestem) or continuous season-long grazing (low to moderate stocking rates resulting in patch grazing) will convert this plant community to the *Little Bluestem/Grama Plant Community*.
- Non-use and no fire will also shift this plant community to the *Little Bluestem/Grama Plant Community*.

### Little Bluestem/Grama Plant Community

Historically, this plant community evolved under continuous seasonal grazing or continuous season-long grazing and a low fire frequency. This plant community can also result from extended periods of non-use and no fire. Little bluestem dominates this plant community, as it takes advantage of soil disturbance (resulting from hoof action, or increased bare ground due to reduced plant vigor under non-use and no fire). Other significant grasses or grass-likes include blue grama, sideoats grama and sedge. Forbs commonly found in this plant community include cudweed sagewort, purple coneflower and dotted gayfeather. Significant shrubs include fringed sagewort and catclaw sensitive briar. The potential vegetation is about 80 percent grasses or grass-like plants, 10 percent forbs, and 10 percent shrubs. Refer to the plant community composition and group annual production table for species composition and production. Although production remains relatively high, little bluestem plants often become “wooly,” and largely unavailable to most herbivores.

This plant community is moderately resistant to change. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

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: NE6638

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

Growth curve description: Warm-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	15	20	30	15	5	5	0	0

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

- Heavy continuous grazing will convert the plant community to the *Blue Grama/Sedge Plant Community*.
- Prescribed grazing or prescribed burning followed by prescribed grazing will convert this plant community to the *Needlegrass/Grama/Little Bluestem Plant Community*.

### Blue Grama/Sedge Plant Community

This plant community evolves from heavy grazing over many years. Diversity is diminished, as the short grasses become dominant in the plant community. The grazing tolerant blue grama and sedges replace little bluestem, western wheatgrass and the needlegrasses. Sideoats grama remains in the plant community, but is less productive because of competition and grazing pressure. Due to low palatability, cudweed sagewort, milkvetch, heath aster, and green sagewort become more prevalent in the plant community. Fringed sagewort is the dominant shrub in this plant community. The potential vegetation is about 75 percent grasses or grass-like plants, 10 percent forbs, and 15 percent shrubs. Refer to the plant community composition and group annual production table for species composition and production.

This plant community is resistant to change. The herbaceous species present are not suitable to grazing.

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: NE6637

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

Growth curve description: Warm-season dominant, cool-season subdominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	15	24	23	15	5	5	0	0

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

- Long-term prescribed grazing that includes changing season of use and allowing adequate recovery periods will slowly lead this plant community back to the *Little Bluestem/Grama Plant Community*.

### Annual/Pioneer Perennial Plant Community

This plant community develops under annual heavy continuous grazing and/or excessive disturbance. The dominant vegetation includes pioneer annual grasses, forbs, invaders, and early successional biennial and perennial species. Grasses may include red threeawn, sixweeks fescue, smooth brome grass, crested wheatgrass, annual brome, needleandthread, prairie Junegrass, western wheatgrass, and little bluestem. The dominant forbs include curlycup gumweed, salsify, cudweed sagewort, kochia, thistles, pussytoes, and other early successional species. Shrubs that may be present include rose, fringed sagewort, and broom snakeweed. The community also is susceptible to invasion of other 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. Soil erosion is potentially high in this plant community. 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.

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

- Under long-term prescribed grazing and/or removal of disturbance, including adequate rest periods, this plant community will move through the successional stages, and may eventually lead to a plant community resembling the *Needlegrass/Grama/Little Bluestem Plant Community*.

## **Ecological Site Interpretations**

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

-- Under Development --

**Needlegrass/Grama/Little Bluestem Plant Community:**

**Little Bluestem/Grama Plant Community:**

**Blue Grama/Sedge 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 &amp; Grass-likes</b>							
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
buffalograss	U U D U	N U D U	U U D U	N U D U	N U D U	U U D U	U U D 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
hairy 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
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
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 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
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
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>Forbs</b>							
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
dalea	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
dotted 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
false boneset	U U D U	N D U N	U U D U	N D U N	N D U N	U U D U	N D U N
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
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
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
purple prairie clover	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
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
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
thistle	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
western ragweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
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
<b>Shrubs</b>							
catclaw sensitive briar	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
dwarf false indigo	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
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
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
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
skunkbush sumac	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 U D
yucca	D N N D	D U U D	D N N D	D U U D	D U U D	D N N D	D U U D

**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

The following table lists annual, suggested initial stocking rates with average growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of conservation planning. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this a resource inventory is necessary to document plant composition and production. More accurate carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data and actual stocking records, particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Average Annual Production (lbs./acre, air-dry)	Stocking Rate* (AUM/acre)
Needlegrass/Grama/Little Bluestem	2300	0.63
Little Bluestem/Grama	1900	0.52
Blue Grama/Sedge	1000	0.27
Annual/Pioneer Perennial	800	**

\*Based on 912 lbs./acre (air-dry weight) per Animal Unit Month (AUM), and on 25 percent harvest efficiency (refer to USDA NRCS, National Range and Pasture Handbook).

\*\*Highly variable; stocking rate needs to be determined onsite.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage. During the dormant period, the forage for livestock will likely be lacking protein to meet livestock requirements, and added protein will allow ruminants to better utilize the energy stored in grazed plant materials. A forage quality test (either directly or through fecal sampling) should be used to determine the level of supplementation needed.

## Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B. Infiltration ranges from moderately slow to moderate. Runoff potential for this site varies from medium to high depending on 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 example of an exception would be where short grasses form a strong 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 Part 630, NRCS National Engineering Handbook).

## 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

(066XY036NE) – Loamy 18-22" P.Z. (066XY058NE) – Loamy 22-25" P.Z.  
(066XY040NE) – Shallow Limy (066XY062NE) – Shallow to Gravel

### Similar Sites

(066XY040NE) – Shallow Limy  
[less little bluestem; slightly lower production; soils shallow to rock, gravel or other root restrictive layer (20 inches or less)]

### Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Wayne Bachman, Soil Scientist, NRCS; Stan Boltz, Range Management Specialist, NRCS; Anna Ferguson, Soil Conservationist, NRCS; Roger Hammer, Soil Scientist, NRCS; Dana Larsen, Range Management Specialist, NRCS; Dave Schmidt, Rangeland Management Specialist, NRCS; and Kim Stine, Rangeland Management Specialist, NRCS.

Data Source      Number of Records      Sample Period      State      County  
SCS-RANGE-417

### State Correlation

This site has been correlated with NE and SD in MLRA 66. This site was formerly called Limy Upland in NE.

### Field Offices Counties

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

### Field Offices Counties

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

### Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 43i – Keya Paha Tablelands.

### Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://www.hprcc.unl.edu/>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://www.wcc.nrcs.usda.gov>)

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (<http://nasis.nrcs.usda.gov>)

USDA, NRCS, 2002. National Soil Survey Handbook, title 430-VI.  
(<http://soils.usda.gov/technical/handbook/>)

**Site Type: Rangeland**  
**MLRA: 66 – Dakota - Nebraska Eroded Tableland**

**Thin Upland**  
**R066XY059NE**

## **Site Description Approval**

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

\_\_\_\_\_  
Date

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

\_\_\_\_\_  
Date