

Ecological site R064XY024NE

Subirrigated

Accessed: 05/17/2024

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

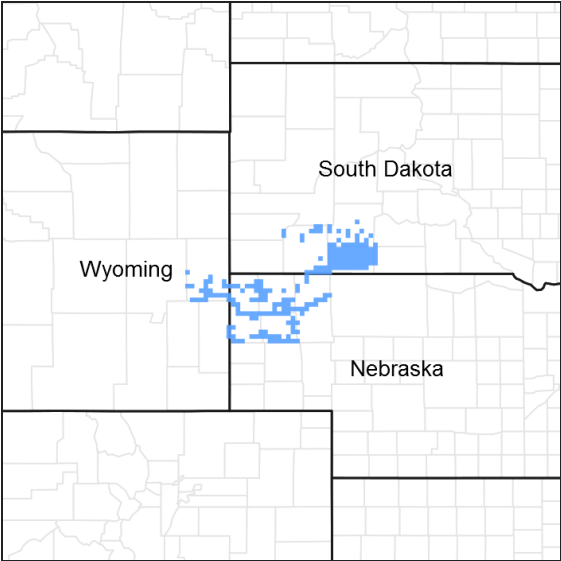


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Classification relationships

Level IV Ecoregions of the Conterminous United States: 25a – Pine Ridge Escarpment, 43h – White River Badlands, and 43i – Keya Paha Tablelands.

Associated sites

R064XY022NE	Wet Land
R064XY029NE	Sandy Lowland

Similar sites

R064XY025NE	Saline Subirrigated [More salt tolerant species.]
-------------	--

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified

Herbaceous	(1) <i>Andropogon gerardii</i> (2) <i>Schizachyrium scoparium</i>
------------	--

Physiographic features

This site occurs on nearly level valleys adjacent to streams, springs and ponds.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Flood plain (3) Stream terrace
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional to frequent
Ponding frequency	None
Elevation	884–1,219 m
Slope	0–3%
Water table depth	46–91 cm
Aspect	Aspect is not a significant factor

Climatic features

MLRA 64 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 air masses move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 14 to 20 inches per year. The normal average annual temperature is about 47° F. January is the coldest month with average temperatures ranging from about 21° F (Wood, SD) to about 25° F (Hemingford, NE). July is the warmest month with temperatures averaging from about 70° F (Keeline 3 W, WY) to about 76° F (Wood, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 55° F. This large annual range attests to the continental nature of this area's climate. Hourly 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 cool season plants begins in early to mid March, slowing or ceasing in late June. Warm season plants begin growth about mid May and continue to early or mid September. Green up of cool season plants may occur in September and October when adequate soil moisture is present.

Table 3. Representative climatic features

Frost-free period (average)	143 days
Freeze-free period (average)	163 days
Precipitation total (average)	508 mm

Influencing water features

Soil features

The features common to soils in this site are the silt loam to fine sandy loam textured surface layers and slopes of 0 to 3 percent. These soils have water tables below the surface for all of the growing season. The water table is non-saline and non-alkaline.

The soils in this site are somewhat poorly drained and formed in loamy or sandy alluvium. The surface layer is 4 to 15 inches thick. The texture of the subsurface soils ranges from silty clay loam to sand. This site should show no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are typically indistinguishable.

The soil surface is stable and intact. Sub-surface soil layers are not restrictive to water movement and root penetration.

More information can be found in the various soil survey reports. Contact the local USDA Service Center for soil survey reports that include more detail specific to your location.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Very fine sandy loam (3) Fine sandy loam
Family particle size	(1) Sandy
Drainage class	Somewhat poorly drained
Permeability class	Moderately slow to rapid
Soil depth	203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	7.62–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–6%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

This site developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfire (often of light intensities), and other biotic and abiotic factors that typically influence soil/site development. Changes will occur in the plant communities due to short-term weather variations, impacts of native and/or exotic plant and animal species, and management actions. While the following plant community descriptions describe more typical transitions between communities that will occur, severe disturbances, such as periods of well-below average precipitation, can cause significant shifts in plant communities and/or species composition.

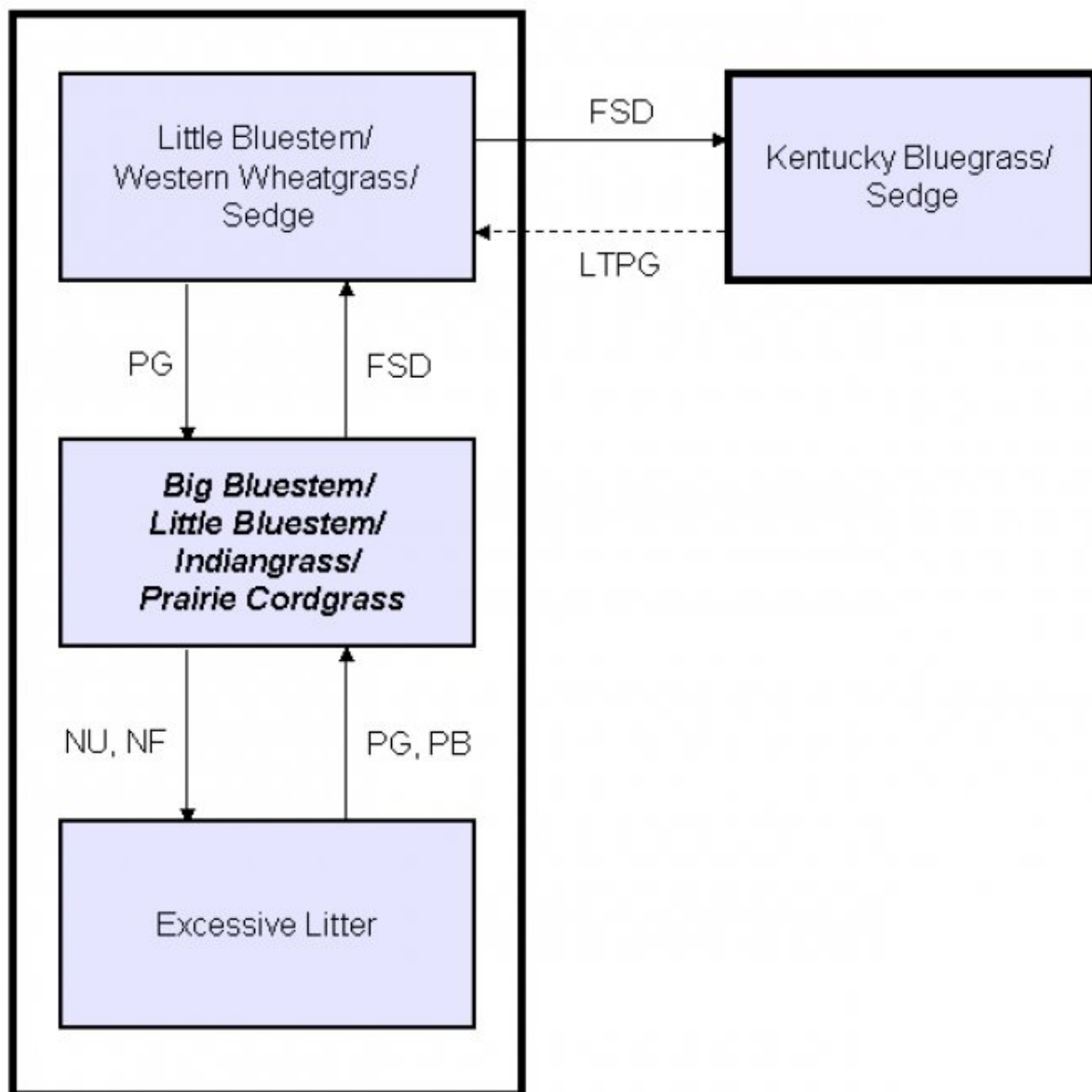
Continuous season-long grazing (during the typical growing season of May through October) and/or repeated seasonal grazing (e.g., every spring, every summer) without adequate recovery periods following each grazing occurrence causes this site to depart from the Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass Plant Community. Species such as sand dropseed, needleandthread and blue grama will increase, while sand bluestem, prairie sandreed and little bluestem will decrease. Species such as Kentucky bluegrass, Baltic rush, scouring rush and other various grass-likes will increase forming a cool season dominated plant community. Grasses such as big bluestem, prairie cordgrass, Indiangrass, and switchgrass will decrease in frequency and production and can eventually be removed from the site. Little bluestem and western wheatgrass will initially increase and then begin to

decrease. Kentucky bluegrass and sedges will continue to increase and eventually become sod-bound. Plants such as Dalmatian toadflax, kochia, and leafy spurge will invade the site. Excessive litter, decadence and plant mortality can result from the lack of fire or non-use.

Interpretations are primarily based on the Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass Plant Community. It has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been used. 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.

State and transition model



FSD - Frequent severe defoliation; **LTPG** - Long-term prescribed grazing (>20 years); **NF, NU** - No fire, non-use; **PB** - Prescribed burning; **PG** - Prescribed grazing (planned, controlled harvest of vegetation with grazing or browsing animals – see FOTG, Section IV, 528).

State 1

Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass

Community 1.1

Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass

Interpretations are based primarily on the Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass Plant Community (this is also considered to be climax). This plant community 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 80-95% grasses and grass-like, 5-10% forbs, and 0-10% woody plants by air-dry weight. Tall and mid warm season grasses dominate this community. The major grasses include big bluestem, little bluestem, prairie cordgrass, Indiangrass and switchgrass. Other grasses and grass-like occurring on the community include western wheatgrass, Canada wildrye, Baltic rush, spikerushes, and bulrushes. Key forbs and shrubs include American licorice, Maximilian sunflower, clovers, milkvetches and willows. This plant community is diverse, stable, productive and 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.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	3688	4217	4607
Forb	235	361	504
Shrub/Vine	—	121	247
Tree	—	121	247
Total	3923	4820	5605

Figure 5. Plant community growth curve (percent production by month). NE6410, Pine Ridge/Badlands, lowland warm-season dominant. Warm-season dominant, lowland.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		3	7	15	25	25	17	6	2		

State 2

Little Bluestem/Western Wheatgrass/Sedge

Community 2.1

Little Bluestem/Western Wheatgrass/Sedge

This plant community developed under frequent and severe defoliation without periodic rest. Big bluestem, prairie cordgrass, Indiangrass, switchgrass, and Canada wildrye have been significantly reduced. Little bluestem may initially increase or decrease depending upon the season of use. Kentucky bluegrass has begun to invade. This plant community is at risk of losing tall warm season grasses, palatable forbs and shrubs. This community indicates key management concerns. Prescribed grazing at this point will stabilize the community at or near the Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass Plant Community, while increased disturbance can easily move the community to a more degraded state. While plant diversity has been reduced, the soil is stable. The water cycle, nutrient cycle and energy flow is slightly reduced but continues to adequately function.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2528	2942	3323
Forb	163	252	364
Shrub/Vine	—	84	174
Tree	—	84	174
Total	2691	3362	4035

Figure 7. Plant community growth curve (percent production by month).
NE6408, Pine Ridge/Badlands, lowland cool-season/warm-season co-
dominant. Cool-season, warm-season co-dominant, lowland.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	12	20	25	19	11	5	3		

State 3 Excessive Litter

Community 3.1 Excessive Litter

This plant community occurs after an extended period of non-use, and where fire has been eliminated. The dominant plants tend to be similar to those found in the Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass Plant Community, however in advanced stages, frequency and production can be lower. Litter amounts have increased causing plants to become decadent. Much of the plant nutrients are tied up in 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 (prairie cordgrass) form small colonies because of a lack of tiller stimulation. This plant community is not resistant to change. Grazing or fire can easily move it toward the Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass Plant Community. Soil erosion is not a concern due to increased litter levels and landscape position.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	3166	3430	3660
Forb	196	303	420
Tree	—	202	420
Shrub/Vine	—	101	207
Total	3362	4036	4707

Figure 9. Plant community growth curve (percent production by month).
NE6409, Pine Ridge/Badlands, warm-season dominant, cool-season sub-
dominant. Warm-season dominant, cool-season sub-dominant, lowlands.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		3	8	18	27	23	12	6	3		

State 4 Kentucky Bluegrass/Sedge

Community 4.1 Kentucky Bluegrass/Sedge

This plant community developed with further frequent and severe defoliation. The plant community is predominantly

cool season grasses and grass-likes. Kentucky bluegrass has fully invaded the community and persists in a sod-bound condition. Baltic rush, various sedges, and foxtail barley have increased. Remnant amounts of western wheatgrass may still persist in localized colonies. Big bluestem, little bluestem, prairie cordgrass, Indiangrass, and switchgrass have been removed. Forbs such as kochia and Russian thistle have also increased. Invasive species such as leafy spurge and downy brome can invade the site if prescribed grazing management is not implemented. This community remains stable but has lost much of its production and diversity. The nutrient cycle is impaired due to the loss of warm season grass species, deep-rooted forbs (legumes and others) and shrubs. Soil compaction can be a concern if continuously grazed during wet cycles. It will take a long time to bring this plant community back to the Big Bluestem/Little Bluestem/Indiangrass/Prairie Cordgrass Plant Community with management alone. Renovation would be very costly due to high salt/alkali content and water table.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1261	1551	2275
Forb	84	179	280
Shrub/Vine	–	45	95
Tree	–	18	39
Total	1345	1793	2689

Figure 11. Plant community growth curve (percent production by month). NE6407, Pine Ridge/Badlands, cool-season dominant, warm-season sub-dominant. Cool-season dominant, warm-season sub-dominant, lowland.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	8	25	30	15	10	2	5		

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Warm Season Mid-Tall Grasses			2410–3615	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	723–1205	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	241–723	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	482–723	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	482–723	–
	prairie cordgrass	SPPE	<i>Spartina pectinata</i>	482–723	–
2	Cool Season Mid-Grasses			0–482	
	slender wheatgrass	ELTRT	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	0–482	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0–482	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0–241	–
3	Sedges and Rushes			241–482	
	sedge	CAREX	<i>Carex</i>	241–482	–
	spikerush	ELEOC	<i>Eleocharis</i>	0–96	–
	smooth horsetail	EQLA	<i>Equisetum laevigatum</i>	0–96	–
	rush	JUNCU	<i>Juncus</i>	0–96	–
	bulrush	SCHOE6	<i>Schoenoplectus</i>	0–96	–
4	Miscellaneous Grasses			0–241	

	Grass, perennial	2GP	<i>Grass, perennial</i>	0–241	–
	foxtail barley	HOJU	<i>Hordeum jubatum</i>	0–241	–
	marsh muhly	MURA	<i>Muhlenbergia racemosa</i>	0–241	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0–241	–
Forb					
5	Forbs			241–482	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–96	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0–96	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–96	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–96	–
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–96	–
	shootingstar	DODEC	<i>Dodecatheon</i>	0–96	–
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	0–96	–
	Maximilian sunflower	HEMA2	<i>Helianthus maximiliani</i>	0–96	–
	knotweed	POLYG4	<i>Polygonum</i>	0–96	–
	goldenrod	SOLID	<i>Solidago</i>	0–96	–
	white heath aster	SYER	<i>Symphotrichum ericoides</i>	0–96	–
	clover	TRIFO	<i>Trifolium</i>	0–96	–
Shrub/Vine					
6	Shrubs			0–241	
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0–241	–
	rose	ROSA5	<i>Rosa</i>	0–241	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0–241	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	0–241	–
Tree					
7	Trees			0–241	
	willow	SALIX	<i>Salix</i>	0–241	–

Table 10. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Warm Season Mid-Tall Grasses			673–1513	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	168–673	–
	prairie cordgrass	SPPE	<i>Spartina pectinata</i>	168–336	–
	big bluestem	ANGE	<i>Andropogon gerardii</i>	168–336	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	168–336	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	0–168	–
2	Cool Season Mid-Grasses			168–504	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	168–504	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0–168	–
	slender wheatgrass	ELTRT	<i>Elymus trachycaulus ssp. trachycaulus</i>	0–67	–
3	Sedges and Rushes			168–673	

	sedge	CAREX	<i>Carex</i>	168–673	–
	spikerush	ELEOC	<i>Eleocharis</i>	0–67	–
	smooth horsetail	EQLA	<i>Equisetum laevigatum</i>	0–67	–
	rush	JUNCU	<i>Juncus</i>	0–67	–
	bulrush	SCHOE6	<i>Schoenoplectus</i>	0–67	–
4	Miscellaneous Grasses			168–504	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	168–504	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–168	–
	foxtail barley	HOJU	<i>Hordeum jubatum</i>	0–168	–
	marsh muhly	MURA	<i>Muhlenbergia racemosa</i>	0–168	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0–67	–
Forb					
5	Forbs			168–336	
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	34–168	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0–168	–
	knotweed	POLYG4	<i>Polygonum</i>	0–168	–
	goldenrod	SOLID	<i>Solidago</i>	0–168	–
	white heath aster	SYER	<i>Symphyotrichum ericoides</i>	0–168	–
	clover	TRIFO	<i>Trifolium</i>	0–168	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–67	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–67	–
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–67	–
	shootingstar	DODEC	<i>Dodecatheon</i>	0–67	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–67	–
	Maximilian sunflower	HEMA2	<i>Helianthus maximiliani</i>	0–34	–
Shrub/Vine					
6	Shrubs			0–168	
	rose	ROSA5	<i>Rosa</i>	0–168	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0–168	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	0–168	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0–101	–
Tree					
7	Trees			0–168	
	willow	SALIX	<i>Salix</i>	0–168	–

Table 11. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Warm Season Mid-Tall Grasses			202–404	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	202–605	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	202–404	–
	prairie cordgrass	SPPE	<i>Spartina pectinata</i>	202–404	–
	big bluestem	ANGF	<i>Andropogon gerardii</i>	202–404	–

	Big Bluestem	PAVE	Anthropogen germin	202-404	
	switchgrass	PAVI2	<i>Panicum virgatum</i>	202-404	—
2	Cool Season Mid-Grasses			0-404	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0-404	—
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0-202	—
	slender wheatgrass	ELTRT	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	0-202	—
3	Sedges and Rushes			202-807	
	sedge	CAREX	<i>Carex</i>	202-807	—
	spikerush	ELEOC	<i>Eleocharis</i>	0-202	—
	smooth horsetail	EQLA	<i>Equisetum laevigatum</i>	0-81	—
	rush	JUNCU	<i>Juncus</i>	0-81	—
	bulrush	SCHOE6	<i>Schoenoplectus</i>	0-81	—
4	Miscellaneous Grasses			202-605	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	202-605	—
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-202	—
	foxtail barley	HOJU	<i>Hordeum jubatum</i>	0-202	—
	marsh muhly	MURA	<i>Muhlenbergia racemosa</i>	0-202	—
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0-81	—
Forb					
5	Forbs			202-404	
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	40-202	—
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0-202	—
	knotweed	POLYG4	<i>Polygonum</i>	0-202	—
	goldenrod	SOLID	<i>Solidago</i>	0-202	—
	white heath aster	SYER	<i>Symphotrichum ericoides</i>	0-202	—
	clover	TRIFO	<i>Trifolium</i>	0-81	—
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0-81	—
	milkvetch	ASTRA	<i>Astragalus</i>	0-81	—
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0-81	—
	shootingstar	DODEC	<i>Dodecatheon</i>	0-81	—
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-81	—
	Maximilian sunflower	HEMA2	<i>Helianthus maximiliani</i>	0-40	—
Shrub/Vine					
6	Shrubs			0-202	
	rose	ROSA5	<i>Rosa</i>	0-202	—
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0-202	—
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	0-202	—
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0-121	—
Tree					
7	Trees			0-404	
	willow	SALIX	<i>Salix</i>	0-404	—

Table 12. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Warm Season Mid-Tall Grasses			36–179	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	36–179	–
	prairie cordgrass	SPPE	<i>Spartina pectinata</i>	0–90	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	0–90	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	0–36	–
	big bluestem	ANGE	<i>Andropogon gerardii</i>	0–36	–
2	Cool Season Mid-Grasses			0–179	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0–179	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0–18	–
	slender wheatgrass	ELTRT	<i>Elymus trachycaulus ssp. trachycaulus</i>	0–18	–
3	Sedges and Rushes			179–538	
	sedge	CAREX	<i>Carex</i>	179–538	–
	spikerush	ELEOC	<i>Eleocharis</i>	90–179	–
	rush	JUNCU	<i>Juncus</i>	0–90	–
	bulrush	SCHOE6	<i>Schoenoplectus</i>	0–36	–
	smooth horsetail	EQLA	<i>Equisetum laevigatum</i>	0–36	–
4	Miscellaneous Grasses			359–717	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	269–717	–
	foxtail barley	HOJU	<i>Hordeum jubatum</i>	90–179	–
	marsh muhly	MURA	<i>Muhlenbergia racemosa</i>	0–90	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–90	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0–18	–
Forb					
5	Forbs			90–269	
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	18–179	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–90	–
	knotweed	POLYG4	<i>Polygonum</i>	0–90	–
	goldenrod	SOLID	<i>Solidago</i>	0–90	–
	white heath aster	SYER	<i>Symphotrichum ericoides</i>	0–90	–
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	18–90	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–36	–
	clover	TRIFO	<i>Trifolium</i>	0–36	–
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–36	–
	shootingstar	DODEC	<i>Dodecatheon</i>	0–18	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–18	–
	Maximilian sunflower	HEMA2	<i>Helianthus maximiliani</i>	0–18	–
Shrub/Vine					
6	Shrubs			0–90	
	rose	ROSA5	<i>Rosa</i>	0–90	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0–90	–

	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	0–90	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (<.5m)</i>	0–18	–
Tree					
7	Trees			0–36	
	willow	SALIX	<i>Salix</i>	0–36	–

Hydrological functions

Moisture conditions are ideal for forage production on this site. Soils on this site are mostly in Hydrologic Soil Group C, but may include soils in Group D, and local areas in Group A. Although most of these soils are very permeable, water tables provide subirrigation of grasses and other vegetation. Surrounding upland areas tend to also have permeable soils and surface inflow peaks on these sites are often muted. These sites are rarely to occasionally flooded. Refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves.

Recreational uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that 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.

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: Stan Boltz, Range Management Specialist, NRCS; Jill Epley, Range Management Specialist, NRCS; Rick Peterson, Range Management Specialist, NRCS; David Steffen, Range Management Specialist, NRCS; Jeff Vander Wilt, Range Management Specialist, NRCS; Phil Young, Soil Scientist, NRCS.

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.

Contributors

SCB

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators

are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Stan Boltz
Contact for lead author	Stan Boltz, stanley.boltz@sd.usda.gov, 605-352-1236
Date	03/31/2004
Approved by	Stan Boltz
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** None.

- 2. Presence of water flow patterns:** None.

- 3. Number and height of erosional pedestals or terracettes:** None.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically less than 5 percent.

- 5. Number of gullies and erosion associated with gullies:** None.

- 6. Extent of wind scoured, blowouts and/or depositional areas:** None.

- 7. Amount of litter movement (describe size and distance expected to travel):** Litter falls in place.

- 8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil aggregate stability ratings should typically be 5 to 6, normally 6. Surface organic matter adheres to the soil surface. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water.

- 9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A-horizon should be 10 to 30 inches thick with black to very dark gray colors when moist. Structure typically is medium to fine granular in the upper A-horizon.

- 10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Deep rooted species (mid and tall rhizomatous cool- and warm-season grasses

and grass-likes) with fine and coarse roots positively influences infiltration.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None – when dry, B horizons can be hard and appear to be compacted, but no platy structure will be present.
-

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant: Tall and mid, warm-season grasses >>

Sub-dominant: Mid and tall, cool-season grasses = grass-likes species >

Other: Forbs > shrubs = trees

Additional: Other grasses in other functional groups occur in minor amounts.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little evidence of decadence or mortality.
-

14. **Average percent litter cover (%) and depth (in):** Litter cover is typically 80 to 90 percent, and depth of litter ranges from 0.5 to 1 inches.
-

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Total annual production ranges from 3,500 to 5,000 pounds/acre, with the reference values being 4,300 pounds/acre (air-dry basis).
-

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** State and local noxious weeds; Kentucky bluegrass may be prevalent during dry cycles, but will typically not dominate the site. Russian olive can dominate this site in localized areas. Most invasive species will occupy the perimeter of this site.
-

17. **Perennial plant reproductive capability:** All species exhibit high vigor relative to climatic conditions. Do not rate based solely on seed production. Perennial grasses and grass-likes should have vigorous rhizomes or tillers.
-