

# United States Department of Agriculture Natural Resources Conservation Service

## Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Subirrigated (Sb) 15-19” Northern Plains Precipitation Zone,

**Site ID:** 043BY474WY

**Major Land Resource Area:** 43B – Central Rocky Mountains

### Physiographic Features

This site normally occurs on nearly level bottomlands and adjacent to perennial streams, springs and ponds.

**Landform:** Hill sides, alluvial fans, ridges & stream terraces

**Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	3700	7500
<b>Slope (percent):</b>	0	6
<b>Water Table Depth (inches):</b>	12	40
<b>Flooding:</b>		
<b>Frequency:</b>	rare	occasional
<b>Duration:</b>	brief	very brief
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	0
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	negligible	low

### Climatic features

Annual precipitation ranges from 15" to 19" per year. May is generally the wettest month. July, August and September are somewhat drier with daily amounts rarely exceeding one inch. Snowfall is quite heavy in the mountainous area. Annual snowfall averages close to 70 inches.

Sunshine is abundant in the latter part of the summer, the greatest amount being in July and August. Sunshine possibility during these two months averages 70 to 75% possibility with only a 65% possibility for June and September. Winter averages about 40% sunshine.

Because of the varied topography, the wind will vary considerably for different parts of the area. The wind is usually much lighter at the lower elevations and in the valleys as compared with the higher terrain. The average winter wind velocity is 8.5 mph, while the summer wind velocity averages 7.5 mph. Winds during storms and on ridges may exceed 45 mph.

Temperatures show a wide range between summer and winter, and between daily maximums and minimums. Summer nights are cool and temperatures drop into the forties at most places before sunrise. Summer daytime temperatures are usually in the seventies and occasionally reach eighty, but rarely reach the mid nineties. Winters are cold with daily lows below freezing most of the time. January has the coldest temperatures with a range of near 10 deg. F at night to the mid thirties in the afternoon. Temperatures of well below zero to –30 deg. F are not uncommon in the winter months.

The growing season for the cool season plants will generally start about April 15 to May 1 and continue to about October 10.

The following information is from the “Sheridan Airport” climate station:

Frost-free period (32 °F): 95-156 days; (5 yrs. out of 10, these days will occur between May 21 – September 19)

Freeze-free period 28 °F): 116-187 days; (5 yrs. out of 10, these days will occur between May 4 – September 29)

Mean annual precipitation: 14.7 inches

Mean annual air temperature: 45.0 °F (31.2 °F Avg. Min. – 58.8 °F Avg. Max.)

For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/> website. Other climate station(s) representative of this precipitation zone include: “Parkman 5 WNW”

## Influencing Water Features

<b>Wetland Description:</b>	<b><u>System</u></b>	<b><u>Subsystem</u></b>	<b><u>Class</u></b>	<b><u>Sub-class</u></b>
None	None	None	None	None

**Stream Type:** C (Rosgen)

## Representative Soil Features

These are subirrigated soils of various depths and textures where nonsaline and/or nonalkaline water tables are within reach of the herbaceous species (usually less than three feet) through most of the growing season.

**Parent Material Kind:** alluvium

**Parent Material Origin:** sandstone, shale

**Surface Texture:** loam, clay loam, silt loam, fine sandy loam, sandy loam, clay, loamy sand

**Surface Texture Modifier:** none

**Subsurface Texture Group:** clay loam

**Surface Fragments ≤ 3” (% Cover):** 0

**Surface Fragments > 3” (%Cover):** 0

**Subsurface Fragments ≤ 3” (% Volume):** 0

**Subsurface Fragments > 3” (% Volume):** 0

	<b><u>Minimum</u></b>	<b><u>Maximum</u></b>
<b>Drainage Class:</b>	poorly drained	moderately well drained
<b>Permeability Class:</b>	moderately slow	moderately rapid
<b>Depth (inches):</b>	20	>60
<b>Electrical Conductivity (mmhos/cm) ≤20”:</b>	0	8
<b>Sodium Absorption Ratio ≤20”:</b>	0	10
<b>Soil Reaction (1:1 Water) ≤20”:</b>	6.6	9.0
<b>Soil Reaction (0.1M CaCl2) ≤20”:</b>	NA	NA
<b>Available Water Capacity (inches) ≤30”:</b>	2.8	6.2
<b>Calcium Carbonate Equivalent (percent) ≤20”:</b>	0	10

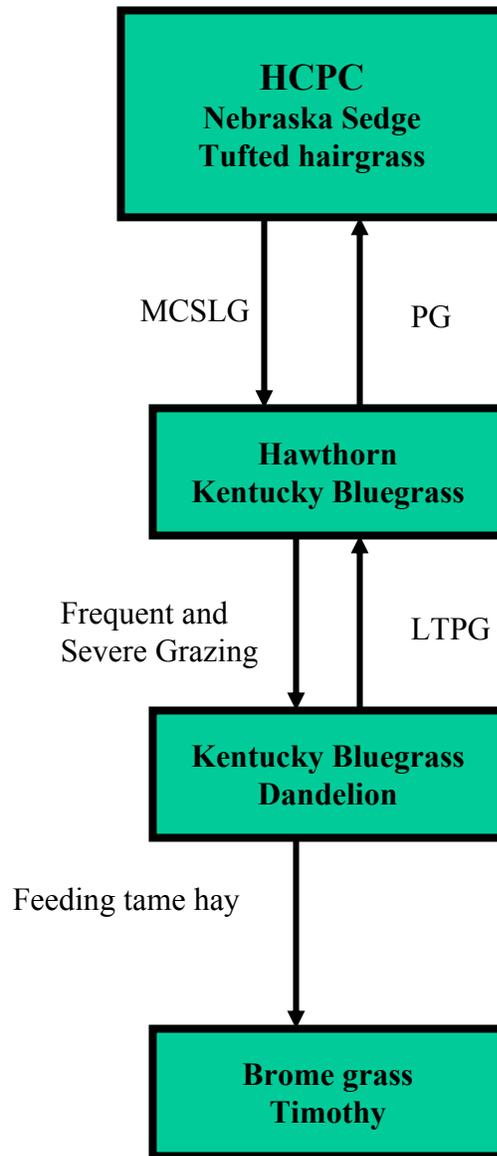
## Plant Communities

### Ecological Dynamics of the Site:

As this site deteriorates from improper grazing management, species such as spike sedge and Baltic rush increase. Species such as Kentucky bluegrass invade. Grasses such as tufted hairgrass, Nebraska sedge and northern and blue-joint reedgrass will decrease in frequency and production.

The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.



**BM** - Brush Management (fire, chemical, mechanical)

**Freq. & Severe Grazing** - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season

**GLMT** - Grazing Land Mechanical Treatment

**LTPG** - Long-term Prescribed Grazing

**MCSLG** - Moderate, Continuous Season-long Grazing

**NU, NF** - No Use and No Fire

**PG** - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)

**VLTPG** - Very Long-term Prescribed Grazing (could possibly take generations)

**Na** - Moderate Sodium in Soil

**Plant Community Composition and Group Annual Production**  
**Reference Plant Community (HCPC)**

COMMON NAME/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Annual Production (Normal Year)		
			Group	lbs./acre	% Comp.
<b>GRASSES AND GRASS-LIKES</b>			<b>Total: 5000</b>		
<b>GRASSES/GRASSLIKES</b>					
Nebraska sedge	Carex nebrascensis	CANE2	1	500 - 1250	10 - 25
Reedgrasses	Calamagrostis spp.	CALAM	2	500 - 1250	10 - 25
Tufted hairgrass	Deschampsia caespitosa	DECA18	3	500 - 1000	10 - 20
Spike sedge	Carex nardina	CANA2	4	500 - 1000	10 - 20
<b>MISC. GRASSES/GRASSLIKES</b>			<b>5</b>	<b>500 - 1000</b>	<b>10 - 20</b>
Alpine timothy	Phleum alpinum	PHAL2	5	0 - 250	0 - 5
Baltic rush	Juncus balticus	JUBA	5	0 - 250	0 - 5
Basin wildrye	Leymus cinereus	LECI4	5	0 - 250	0 - 5
Bearded wheatgrass	Elymus caninus	ELCA11	5	0 - 250	0 - 5
Bluejoint Reedgrass	Calamagrostis canadensis	CACAM	5	0 - 250	0 - 5
Canada wildrye	Elymus canadensis	ELCA4	5	0 - 250	0 - 5
Fowl bluegrass	Poa palustris	POPA2	5	0 - 250	0 - 5
Idaho fescue	Festuca idahoensis	FEID	5	0 - 250	0 - 5
Northern Reedgrass	Calamagrostis stricta	CAST13	5	0 - 250	0 - 5
Prairie cordgrass	Spartina pectinata	SPPE	5	0 - 250	0 - 5
Pumpelly bromegrass	Bromus inermis ssp. pumpellianus	BRINP5	5	0 - 250	0 - 5
Western wheatgrass	Pascopyrum smithii	PASM	5	0 - 250	0 - 5
other perennial grasses (native)		2GP	5	0 - 250	0 - 5
<b>FORBS</b>			<b>6</b>	<b>250 - 750</b>	<b>5 - 15</b>
American licorice	Glycyrrhiza lepidota	GLLE3	6	0 - 250	0 - 5
Blue-eyed grass	Sisyrinchium spp.	SISYR	6	0 - 250	0 - 5
cinquefoils	Potentilla spp.	POTEN	6	0 - 250	0 - 5
Mint	Mentha spp.	MENTH	6	0 - 250	0 - 5
Prairie coneflower	Ratibida columnifera	RACO3	6	0 - 250	0 - 5
Sticky geranium	Geranium viscosissimum	GEVI2	6	0 - 250	0 - 5
Western virginsbower	Clematis lequisticifolia	CLLI2	6	0 - 250	0 - 5
yarrows	Achillea spp.	ACHIL	6	0 - 250	0 - 5
other perennial forbs (native)		2FP	6	0 - 250	0 - 5
<b>TREES/SHRUBS</b>					
<b>MISC. SHRUBS</b>			<b>7</b>	<b>250 - 500</b>	<b>5 - 10</b>
American plum	Prunus americana	PRAM	7	0 - 250	0 - 5
Boxelder	Acer negundo ssp. interius	ACNE12	7	0 - 250	0 - 5
Chokecherry	Prunus virginiana	PRVIV	7	0 - 250	0 - 5
Hawthorn	Crataegus spp.	CRATA	7	0 - 250	0 - 5
Snowberry	Symphoricarpus occidentalis	SYOC	7	0 - 250	0 - 5
Wild Rose	Rosa woodsii var. woodsii	ROWOW	7	0 - 250	0 - 5
Willows	Salix spp.	SALIX	7	0 - 250	0 - 5
other shrubs & half shrubs (native)		2SHRUB	7	0 - 250	0 - 5

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.

**Plant Community Narratives**

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is 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”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (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.

**Nebraska Sedge, Tufted Hairgrass Plant Community**

The interpretive plant community for this site is the Historic Climax Plant Community. This site evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 75% grasses or grass-like plants, 15% forbs and 10% woody plants. The major grasses include Nebraska sedge, tufted hairgrass and spike sedge. Grasses of lesser importance are western wheatgrass, bearded wheatgrass, Canada wildrye, basin wildrye, prairie cordgrass, bluejoint reedgrass and northern reedgrass. Woody plants are mainly snowberry, chokecherry, hawthorn, boxelder, American plum, wild rose and willows.

This state produces between 3500 and 6000 pounds annually, depending on the growing conditions.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

The state is extremely resilient and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allow for high drought resistance. This is a healthy and sustainable plant community (site/soil stability, watershed function, and biologic integrity).

Transitions or pathways leading to other plant communities are as follows:

- Moderate, continuous season-long grazing will convert this plant community to the *Hawthorn/Kentucky bluegrass Vegetation State*.
- Heavy, continuous, improper grazing will convert this plant community to *Kentucky bluegrass/Dandelion Vegetation State*.
- Feeding tame hay on this state will convert this site to *Brome/Timothy Vegetation state*.

**Hawthorn/Kentucky Bluegrass Plant Community**

This plant community is the result of moderate season long grazing by domestic livestock. Dominant grasses include rhizomatous wheatgrasses, Kentucky bluegrass, spike sedge and Baltic rush Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), cinquefoil, and scarlet globemallow. Hawthorn, snowberry, wild rose, boxelder, American plum and willows are common in the overstory.

This state produces between 1800 and 3500 pounds annually, depending on the growing conditions.

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When compared to the Historical Climax Plant Community, tufted hairgrass, Nebraska sedge and northern and bluejoint reedgrass have decreased. Spike sedge and cinquefoil have increased. Kentucky bluegrass and curlycup gumweed have invaded, The abundant production and proximity to water make this state important for livestock and wildlife such as birds, mule deer and antelope.

The state is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. The watershed is usually functioning.

The following is the growth curve of this plant community expected during a normal year:

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing over the long-term will result in a plant community very similar to the *Historic Climax Plant Community*.
- Heavy, continuous, improper grazing will convert this plant community to the *Kentucky bluegrass/Dandelion Vegetation State*.

### **Kentucky Bluegrass/Dandelion Plant Community**

This plant community is the result of long-term improper grazing use. This state is dominated by Kentucky bluegrass, dandelion, curlycup gumweed, hawthorn and cheatgrass. The site has been invaded by American licorice and Russian olive. Leafy spurge may invade this state. Willows are reduced.

Production ranges from 900 to 1500 pounds.

Bare ground has increased. The soil of this state is not well protected. Degraded stream banks may erode. The watershed is functioning but may produce excessive runoff. The biotic community is at risk due to invasive plants.

The following is the growth curve of the plant community expected during a normal year:

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Proper grazing use over the long-term will return this state to near *historic climax plant community plant community*.
- Feeding tame hay on this state will convert the site to *Brome/Timothy vegetation state*.

### **Brome/Timothy Plant Community**

This state has been changed to a site dominated by tame grasses. The main species are smooth brome, timothy, Kentucky bluegrass and cheatgrass. Production for domestic animal grazing is

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comparable to Climax conditions. The state is often invaded by noxious weeds such as leafy spurge and Canada thistle.

Production ranges from 1200 to 5000 pounds, depending on climatic conditions.

Bare ground has increased. The soil of this state is not well protected. Degraded stream banks may erode. The watershed is functioning but may produce excessive runoff. The biotic community is at risk due to invasive plants.

The following is the growth curve of the plant community expected during a normal year:

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	30	35	10	5	5	5	0	0

(Monthly percentages of total annual growth)

Transitions or pathways leading to other plant communities are as follows:

- Changing this state to the *Historical Climax Plant Community* may be difficult due to the dominance of tame species.

## Ecological Site Interpretations

### Animal Community – Wildlife Interpretations

**Nebraska Sedge, Tufted Hairgrass Plant Community (HCPC):** The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Woody vegetation provides thermal cover and habitat for migratory birds when found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, migratory song birds, and golden eagles. Many grassland obligate small mammals would occur here.

#### **Hawthorn/Kentucky Bluegrass Plant Community:**

This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. Hawthorn trees will provide habitat for migratory song birds. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of grazing animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

#### **Kentucky Bluegrass/Dandelion Plant Community:**

This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

**Brome/Timothy Plant Community:** This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

**Animal Preferences (Quarterly - 1,2,3,4) for commonly occurring plants in MLRA 43B, 15-19 inch Northern Plains**

COMMON NAME/	SCIENTIFIC NAME	SCI. SYMBOL	Cattle	Sheep	Horses	Mule Deer	Antelope
<b>GRASSES AND GRASS-LIKES</b>							
Alpine timothy	Phelum alpinum	PHAL2	PPPP	PPPP	PPPP	DDDD	UUUU
Baltic rush	Juncus balticus	JUBA	DDDD	UUUU	DDDD	UUUU	UUUU
Basin wildrye	Leymus cinereus	LECI4	PPPP	PPPP	PPPP	DDDD	DDDD
Bearded wheatgrass	Elymus caninus	ELCA	PPPP	DDDD	PPPP	DDDD	DDDD
Big bluegrass	Poa ampla (syn. to Poa secunda)	POAM (POSE)	PPPP	PPPP	PPPP	DDDD	DDDD
Blue grama	Bouteloua gracilis	BOGR2	DDDD	DDDD	DDDD	DDDD	DDDD
Blue wildrye	Elymus glaucus	ELGL	PPPP	DDDD	DDDD	DDDD	DDDD
Bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6	PPPP	PPPP	PPPP	DDDD	DDDD
Bluejoint Reedgrass	Calamagrostis canadensis	CACA4	PPPP	DDDD	PPPP	UUUU	UUUU
Bottlebrush squirreltail	Elymus elymoides	ELELE	DDDD	DDDD	DDDD	UUUU	UUUU
Canada wildrye	Elymus canadensis	ELCA4	PPPP	PPPP	PPPP	DDDD	DDDD
Canby bluegrass	Poa canbyi (syn. to Poa secunda)	POCA (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP
Columbia needlegrass	Achnatherum nelsonii	ACNE3	PPPP	PPPP	DDDD	DDDD	DDDD
Cusic bluegrass	Ribes spp.	RIBES	DDDD	DDDD	DDDD	PPPP	DDDD
Dunehead sedge	Carex phaeocephala	CAPH2	UUUU	UUUU	UUUU	UUUU	UUUU
Fowl bluegrass	Poa palustris	POPA2	DDDD	DDDD	DDDD	UUUU	UUUU
Green needlegrass	Nassella viridula	NAV14	PPPP	PPPP	PPPP	PPPP	PPPP
Idaho fescue	Festuca idahoensis	FEID	PPPP	PPPP	PPPP	PPPP	PPPP
Indian ricegrass	Achnatherum hymenoides	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP
Letterman needlegrass	Achnatherum lettermanii	ACLE9	PPPP	PPPP	DDDD	DDDD	DDDD
Little bluestem	Schizachyrium scoparium	SCSC	PPPP	PPPP	PPPP	DDDD	DDDD
Montana wheatgrass	Elymus albicans	ELAL7	DDDD	DDDD	DDDD	DDDD	DDDD
Mountain bromegrass	Bromus marginatus	BRMA4	PPPP	PPPP	DDDD	DDDD	UUUU
Mountain muhly	Muhlenbergia montana	MUMO	DDDD	DDDD	DDDD	DDDD	UUUU
Nebraska sedge	Carex nebraskensis	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD
Needleandthread	Hesperostipa comata ssp. comata	HECOC8	DPDD	UPDU	DPDD	UDUU	UDUU
Needleleaf sedge	Carex duriuscula	CADU6	UUUU	UUUU	UUUU	UUUU	UUUU
Nodding bromegrass	Bromus anomalus (syn. B. porteri)	BRAN13 (BRPO)	PPPP	PPPP	DDDD	DDDD	UUUU
Northern Reedgrass	Calamagrostis stricta ssp. inexpansa	CASTI3	UPDU	UDUU	UPDU	UDUU	UDUU
Onespike oatgrass	Danthonia unispicata	DAUN	DDDD	PPPP	DDDD	PPPP	DDDD
Plains muhly	Muhlenbergia cuspidata	MUCU3	DDDD	DDDD	DDDD	UUUU	UUUU
Plains reedgrass	Calamagrostis montanensis	CAMO	DDDD	DDDD	DDDD	DDDD	DDDD
Prairie cordgrass	Spartina pectinata	SPPE	PPPP	DDDD	PPPP	UUUU	UUUU
Prairie junegrass	Koeleria macrantha	KOMA	DDDD	DDDD	DDDD	DDDD	DDDD
Pumpelly bromegrass	Bromus inermis spp. Pumpellianus	BRINP5	PPPP	PPPP	DDDD	DDDD	UUUU
Red threeawn	Aristida purpurea	ARPUL	UUUU	UUUU	UUUU	UUUU	UUUU
Reedgrasses	Calamagrostis spp.	CALAM	DDDD	UUUU	DDDD	UUUU	UUUU
Rhizomatous wheatgrasses	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
Richardson needlegrass	Achnatherum richardsonii	ACRI8	PPPP	PPPP	DDDD	DDDD	DDDD
Sand bluestem	Andropogon hallii	ANHA	PPPP	DDDD	PPPP	UUUU	UUUU
Sand dropseed	Sporobolus cryptandrus	SPCR	DDDD	DDDD	DDDD	UUUU	UUUU
Sandberg bluegrass	Poa secunda	POSE	DDDD	DDDD	DDDD	DDDD	DDDD
Sideoats grama	Bouteloua curtipendula	BOCU	PPPP	PPPP	PPPP	DDDD	UUUU
Slender wheatgrass	Elymus trachycaulus ssp. trachycaulus	ELTRT	DPDD	UPDD	DPDD	UDUU	UDUU
Slough sedge	Carex atherodes	CAAT2	DDDD	DDDD	DDDD	DDDD	DDDD
Spike fescue	Leucopoa kingii	LEKI2	PPPP	DDDD	PPPP	PPPP	DDDD
Spike sedge	Carex nardina	CANA2	DDDD	DDDD	DDDD	UUUU	UUUU
Spike trisetum	Trisetum spicatum	TRSP2	PPPP	DDDD	PPPP	PPPP	DDDD
Tall mannagrass	Glyceria elata (syn. G. striata)	GLEL (GLST)	DDDD	UUUU	DDDD	UUUU	UUUU
Thickspike wheatgrass	Elymus lanceolatus	ELLAL	DDDD	DDDD	DDDD	DDDD	DDDD
Threadleaf sedge	Carex filifolia	CAFI	DDDD	DDDD	DDDD	DDDD	PPPP
Tufted hairgrass	Deschampsia caespitosa	DECA18	PPPP	PPPP	PPPP	DDDD	DDDD
Water sedge	Carex aquatilis	CAAQ	DDDD	UUUU	DDDD	UUUU	UUUU
Western wheatgrass	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
<b>FORBS</b>							
American bistort	Polygonum bistortoides	POBI6	DDDD	DDDD	DDDD	DDDD	DDDD
American vetch	Vicia americana	VIAM	PPPP	PPPP	PPPP	PPPP	PPPP
Arrowgrass	Triglochin spp.	TRIGL	TTTT	TTTT	TTTT	TTTT	TTTT
Arrowleaf balsamroot	Triglochin spp.	TRIGL	TTTT	TTTT	TTTT	TTTT	TTTT
Aster	Asters	ASTER	UUUU	UUUU	UUUU	UUUU	UUUU
Balsamroot	Balsamorhiza spp.	BALSA	PPPP	PPPP	PPPP	PPPP	PPPP
Biscuitroot	Lomatium spp.	LOMAT	UDUU	UDUU	UDUU	UDUU	UDUU
Bluebells	Mertensia	MERTE	DDDD	PPPP	DDDD	DDDD	DDDD
Blue-eyed grass	Sisyrinchium spp.	SISYR	DDDD	PPPP	DDDD	DDDD	DDDD
Buckwheat	Eriogonum spp.	ERIOG	UUUU	UUUU	UUUU	UUUU	UUUU
Common commandra	Comandra spp.	COMAN	UUUU	UUUU	UUUU	UUUU	UUUU
Cudweed sagewort	Artemisia ludoviciana	ARLU	UUUU	UUUU	UUUU	UUUU	UUUU

Deathcamas	Zigadenus venenosus	ZIVE	TTTT	TTTT	TTTT	TTTT	TTTT
Dock	Rumex spp.	RUMEX	UUUU	UUUU	UUUU	UUUU	UUUU
Dotted gayfeather	Liatris punctata	LIPU	UPPU	UPPU	UPPU	UPPU	UPPU
Field chickweed	Cerastium arvense	CEAR4	UUUU	UUUU	UUUU	UUUU	UUUU
Flax	Linum spp.	LINUM	UUUU	UUUU	UUUU	UUUU	UUUU
Fleabane	Erigeron spp.	ERIGE2	UUUU	UUUU	UUUU	UUUU	UUUU
Fringed sagewort	Artemisia frigida	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU
Goldenrod	Solidago spp.	SOLID	NUNN	NUNN	NNNN	NUNN	NUNN
Green sagewort	Artemisia campestris	ARCA12	NNNN	NUUN	NNNN	NUUN	NUUN
Gromwell	Buglossoides spp.	BUGLO	UUUU	UUUU	UUUU	UUUU	UUUU
Groundsel	Senecio spp.	SENEC	NNNN	NNNN	NNNN	NNNN	NNNN
Hairy goldenaster	Heterotheca villosa	HEVI4	UUUU	UUUU	UUUU	UUUU	UUUU
Hawksbeard	Crepis acuminata	CRAC2	UUUU	PPPP	UUUU	DDDD	DDDD
Horsetails	Equisetum spp.	EQUIS	UUUU	UUUU	UUUU	UUUU	UUUU
Iris	Iris spp.	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU
Larkspur	Delphinium spp.	DELPH	TTTT	TTTT	TTTT	TTTT	TTTT
Locoweeds	Oxytropis spp.	OXYTR	TTTT	TTTT	TTTT	TTTT	TTTT
Lupine	Lupinus spp.	LUPIN	DDDD	DDDD	DDDD	DDDD	DDDD
Mint	Menthan spp.	MENTH	UUUU	UUUU	UUUU	UUUU	UUUU
Mountain thermopsis	Thermopsis montana	THMOM3	UUUU	UUUU	UUUU	UUUU	UUUU
Nailwort	Paronychia spp.	PARON	NNNN	NNNN	NNNN	NNNN	NNNN
Pale agoseris	Agoseris glauca	AGGL	DDDD	PPPP	DDDD	DDDD	DDDD
Penstemons	Penstemon spp.	PENST	UPPU	UPPU	UPPU	UPPU	UPPU
Phlox	Phlox spp.	PHLOX	NNNN	NNNN	NNNN	NNNN	NNNN
Prairie clovers	Dalea spp.	DALEA	UPPU	UPPU	UPPU	UPPU	UPPU
Prairie coneflower	Ratibida columnifera	RACO3	DDDD	PPPP	DDDD	PPPP	PPPP
Flax	Linum spp.	LINUM	UUUU	UUUU	UUUU	UUUU	UUUU
Pussytoes	Antennaria spp.	ANTEN	NNNN	NNNN	NNNN	NNNN	NNNN
Sandwort	Arenaria spp.	ARENA	NNNN	NNNN	NNNN	NNNN	NNNN
Silverleaf scurfpea	Pediomelum argophyllum	PEAR6	UUUU	UUUU	UUUU	UUUU	UUUU
Stemless mock goldenweed	Stenotus acaulis	STAC	UUUU	UUUU	UUUU	UUUU	UUUU
Sticky geranium	Geranium viscosissimum	GEVI2	PPPP	PPPP	DDDD	PPPP	DDDD
Stoncrop	Sedum spp.	SEDUM	UUUU	UUUU	UUUU	UUUU	UUUU
Toadflax	Comandra umbellata	COUMP	UUUU	UUUU	UUUU	UUUU	UUUU
Violets	Viola spp.	VIOLA	DDDD	DDDD	DDDD	DDDD	DDDD
Water hemlock	Cicuta spp.	CICUT	TTTT	TTTT	TTTT	TTTT	TTTT
Waterleaf	Hydrophyllum	HYDRO4	DDDD	PPPP	DDDD	PPPP	DDDD
Western virginsbower	Clematis lequisticifolia	CLLI2	UUUU	DDDD	UUUU	DDDD	DDDD
Western wallflower	Erysimum capitatum	ERCAC	DDDD	DDDD	DDDD	DDDD	DDDD
Western yarrow	Achillea millefolium	ACMI2	NUUN	NUUN	NNNN	NUUN	NUUN
<b>TREES/SHRUBS</b>							
American plum	Prunus americana	PRAM	DDDD	DDDD	DDDD	DDDD	UUUU
Big sagebrush	Artemisia tridentata	ARTR2	UUUU	DDDD	UUUU	DDDD	DDDD
Black sagebrush	Artemisia nova	ARNO4	UUUU	PPPP	UUUU	PPPP	PPPP
Boxelder	Acer negundo	ACNE2	UUUU	UUUU	UUUU	UUUU	UUUU
Chokecherry	Prunus virginiana	PRVI	DDDD	DDDD	DDDD	PPPP	DDDD
Common Juniper	Juniperus communis	JUSCO6	UUUU	UUUU	UUUU	UUUU	UUUU
Cottonwoods	Tanacetum vulgare	TAVU	UUUU	UUUU	UUUU	UUUU	UUUU
Green ash	Fraxinus pennsylvanica	FRPE	UUUU	UUUU	UUUU	UDDU	UDDU
Hawthorn	Crataegus spp.	CRATA	UUUU	UUUU	UUUU	UUUU	UUUU
Juniper	Juniperus scopulorum	JUSC2	UUUU	UUUU	UUUU	DDDD	UUUU
Mountain mahogany	Cercocarpus spp.	CERCO	DDDD	PPPP	UUUU	PPPP	UUUU
Ponderosa pine	Pinus ponderosa	PIPO	UTTU	UNNU	UNNU	UNNU	UNNU
Rocky-Mountain juniper	Juniperus scopulorum	JUSC2	UNNU	UNNU	UNNU	UNNU	DUUD
Rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DDDD	UUUU	DDDD	DDDD
Silver sagebrush	Artemisia cana	ARCAC5	DDDD	DDDD	DDDD	PPPP	PPPP
Skunkbush sumac	Rhus trilobata	RHTR	DDDD	DDDD	DDDD	DDDD	DDDD
Snowberry	Symphoricarpos occidentalis	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU
Threetip sagebrush	Artemisia tripartita	ARTR4	UUUU	DDDD	UUUU	UUUU	DDDD
Wild rose	Rosa woodsii var. woodsii	ROWOW	DDDD	DDDD	UUUU	DDDD	DDDD
Willows	Salix L.	SALIX	PPPP	PPPP	DDDD	PPPP	UUUU
Winterfat	Krascheninnikovia lanata	KRLA2	PPPP	PPPP	PPPP	PPPP	PPPP
Yucca	Yucca glauca	YUGL	DDDD	DDDD	DDDD	DDDD	DDDD

## Animal Community – Grazing Interpretations

The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity. If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor.

Plant Community	Production (Lb./ac)	Carrying Capacity* (AUM/ac)
Nebraska sedge, Tufted hairgrass	3500-6000	2.0
Hawthorne/Kentucky bluegrass	1800-3500	1.5
Kentucky bluegrass/Dandelion	900-1500	1.0
Brome/Timothy	1200-5000	2.0

\* - Continuous, season-long grazing by cattle under average growing conditions.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

## Hydrology Functions

Climate is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B and C, with localized areas in hydrologic group D. Infiltration ranges from moderately slow to moderately rapid. Runoff potential for this site varies from moderate to high depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% 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% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

## Recreational Uses

This site provides hunting opportunities for upland game species. The wide variety 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.

Site Type: Rangeland  
MLRA: 43B – Central Rocky Mountains

Subirrigated 15-19”NP P.Z.  
R043BY474WY

**Other Products**

None noted.

**Supporting Information**

**Associated Sites**

Wetland	043BY478WY
Lowland	043BY404WY
Overflow	043BY428WY

**Similar Sites**

() – Subirrigated 10-14” Northern Plains P.Z., 058BY174WY has lower production.

**Inventory Data References (narrative)**

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Other sources used as references include USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

**Inventory Data References**

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417		1971-1994	WY	
Ocular estimates		1990-1999	WY	

**Site Correlation**

**Type Locality**

**Field Offices**

Buffalo, Sheridan

**Relationship to Other Established Classifications**

**Other References**

**Site Description Approval**

\_\_\_\_\_  
State Range Management Specialist

\_\_\_\_\_  
Date

## Ecological Reference Worksheet

**Author(s)/participant(s):** \_\_\_\_\_  
**Contact for lead author:** \_\_\_\_\_ **Reference site used? Yes/No**  
**Date:** 4/05 **MLRA:** 43B **Ecological Site:** R043BY474WY Subirrigated (Sb) 15-19"NP  
 This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community *cannot* be used to identify the ecological site.

<p><b>Indicators.</b> For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for <b>each</b> community within the reference state, when appropriate &amp; (3) cite data. Continue descriptions on separate sheet.</p>
<p><b>1. Number and extent of rills:</b> Rills should not be present</p>
<p><b>2. Presence of water flow patterns:</b> Barely observable</p>
<p><b>3. Number and height of erosional pedestals or terracettes:</b> Essentially non-existent</p>
<p><b>4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are <i>not</i> bare ground):</b> Bare ground is less than 5%</p>
<p><b>5. Number of gullies and erosion associated with gullies:</b> Active gullies should not be present</p>
<p><b>6. Extent of wind scoured, blowouts and/or depositional areas:</b> None</p>
<p><b>7. Amount of litter movement (describe size and distance expected to travel):</b> Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.</p>
<p><b>8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different):</b> Plant cover and litter is at 95% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.</p>
<p><b>9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different):</b> Use Soil Series description for depth and color of A-horizon</p>
<p><b>10. Effect of plant community composition (relative proportion of different functional groups) &amp; spatial distribution on infiltration &amp; runoff:</b> Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is moderately slow to moderately rapid.</p>
<p><b>11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):</b> No compaction layer or soil surface crusting should be present.</p>
<p><b>12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: &gt;&gt;, &gt;, = to indicate much greater than, greater than, and equal to):</b> Tall and Mid stature Grasses/grasslikes &gt; Forbs &gt; Shrubs &gt; Short stature Grasses/Grasslikes</p>
<p><b>13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):</b> Very Low</p>
<p><b>14. Average percent litter cover and depth :</b> Average litter cover is 50-55% with depths of 0.75 to 1.5 inches</p>
<p><b>15. Expected annual production (this is all above-ground production, not just forage production):</b> 5000 lbs/ac</p>
<p><b>16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, “can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site”:</b> Kentucky Bluegrass, Spike sedge, Baltic rush, Dandelion, Hawthorn, and Species found on Noxious Weed List</p>
<p><b>17. Perennial plant reproductive capability:</b> All species are capable of reproducing</p>