

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Subirrigated (Sb) 15-19” Black Hills Precipitation Zone

Site ID: 061XY174WY

Major Land Resource Area: 61 – Black Hills Foot Slopes

Physiographic Features

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

Landform: Alluvial fans & stream terraces

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	3500	5000
Slope (percent):	0	6
Water Table Depth (inches):	12	40
Flooding:		
Frequency:	rare	occasional
Duration:	brief	very brief
Ponding:		
Depth (inches):	0	0
Frequency:	None	None
Duration:	None	None
Runoff Class:	negligible	low

Climatic features

Annual precipitation ranges from 15-19 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Strong winds are less frequent than over other areas of Wyoming. Occasional storms, however, can bring brief periods of high winds with gusts exceeding 50 mph.

Growth of native cool season plants begins about April 1 and continues to about July 1. Native warm season plants begin about May 15 and continue to about August 15. Fall green-up may occur in September and last through October.

The following information is from the “Devils Tower 2” climate station:

	<u>Minimum</u>	<u>Maximum</u>	<u>5 yrs. out of 10 between</u>
Frost-free period (days) (32°F):	58	93	June 6 – September 7
Freeze-free period (days) (28°F):	95	125	May18 – September 20
Annual Precipitation (inches):	14.81	20.17	

Mean annual precipitation: 17.66 inches

Mean annual air temperature: 44.4°F (28.6°F Avg. Min. to 60.1°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 “Hulett” and “Sundance”.

Influencing Water Features

Wetland Description:	<u>System</u>	<u>Subsystem</u>	<u>Class</u>	<u>Sub-class</u>
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

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

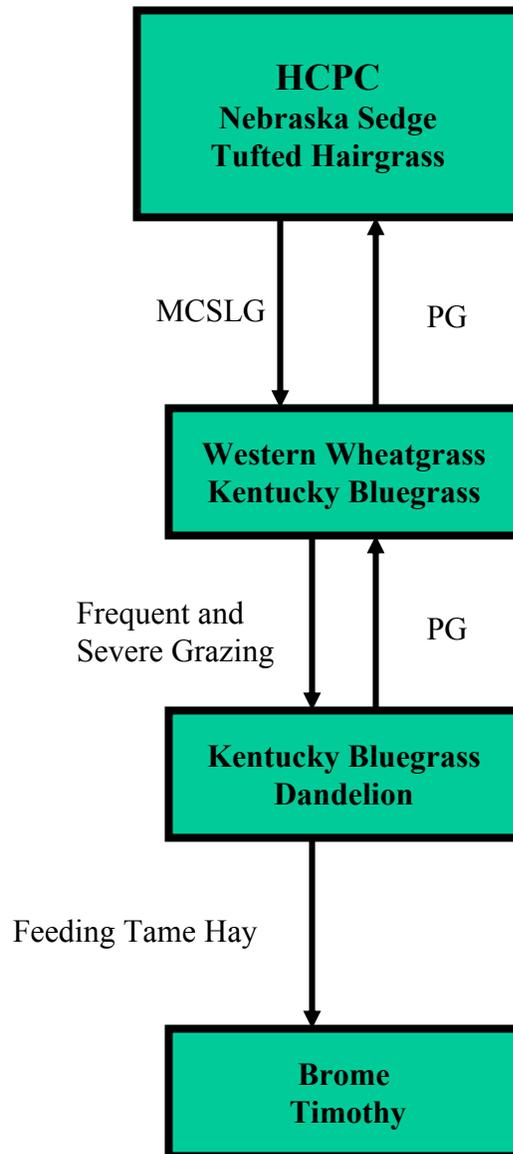
Plant Communities

Ecological Dynamics of the Site:

As this site deteriorates from improper grazing management, species such as spike sedge and Baltic rush increase. Grasses such as tufted hairgrass, Nebraska sedge and northern and blue-joint reedgrass will decrease in frequency and production. Grasses such as Kentucky bluegrass invade. Many of these sites have been invaded by tame species either from intentional seeding or by seed spreading from adjacent hay or pastureland.

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.
			Total: 5000		
GRASSES AND GRASS-LIKES					
GRASSES/GRASSLIKES					
Prairie cordgrass	<i>Spartina pectinata</i>	SPPE	1	1250 - 2000	25 - 40
Nebraska sedge	<i>Carex nebrascensis</i>	CANE2	2	750 - 1250	15 - 25
Slender wheatgrass	<i>Elymus trachycaulis</i>	ELTR7	3	250 - 750	5 - 15
Spike sedge	<i>Carex nardina</i>	CANA2	4	250 - 500	5 - 10
Bearded wheatgrass	<i>Elymus caninus</i>	ELCA11	5	250 - 500	5 - 10
Pumpelly bromegrass	<i>Bromus inermis</i> spp. <i>pumpellianus</i>	BRINP5	6	250 - 500	5 - 10
Switchgrass	<i>Panicum virgatum</i>	PAVI2	7	250 - 500	5 - 10
MISC. GRASSES/GRASSLIKES			8	250 - 500	5 - 10
Baltic rush	<i>Juncus balticus</i>	JUBA	7	0 # 250	0 - 5
Bluejoint reedgrass	<i>Calamagrostis canadensis</i>	CACAM	8	0 - 250	0 - 5
Canada wildrye	<i>Elymus canadensis</i>	ELCA4	8	0 - 250	0 - 5
Fowl bluegrass	<i>Poa palustris</i>	POPA2	8	0 - 250	0 - 5
Mat muhly	<i>Muhlenbergia richardsonis</i>	MURI	8	0 - 250	0 - 5
Northern reedgrass	<i>Calamagrostis stricta</i>	CAST13	8	0 - 250	0 - 5
Tufted hairgrass	<i>Deschampsia caespitosa</i>	DECA18	8	0 - 250	0 - 5
Western wheatgrass	<i>Pascopyrum smithii</i>	PASM	8	0 - 250	0 - 5
other perennial grasses (native)		2GP	8	0 - 250	0 - 5
FORBS			9	250 - 500	5 - 10
American licorice	<i>Glycyrrhiza lepidota</i>	GLLE3	9	0 - 250	0 - 5
Blue-eyed grass	<i>Sisyrinchium</i> spp.	SISYR	9	0 - 250	0 - 5
Sticky geranium	<i>Geranium viscosissimum</i>	GEVI2	9	0 - 250	0 - 5
Western virginsbower	<i>Clematis ligusticifolia</i>	CLLI2	9	0 - 250	0 - 5
Western yarrow	<i>Achillea lanulosa</i>	XYLOR	9	0 - 250	0 - 5
other perennial forbs (native)		2FP	9	0 - 250	0 - 5
TREES/SHRUBS			10	250 - 500	5 - 10
Chokecherry	<i>Prunus virginiana</i>	PRVIV	10	0 - 250	0 - 5
Hawthorn	<i>Crataegus</i> spp.	CRATA	10	0 - 250	0 - 5
Snowberry	<i>Symphoricarpos occidentalis</i>	SYOC	10	0 - 250	0 - 5
Willows	<i>Salix</i> spp.	SALIX	10	0 - 250	0 - 5
other shrubs & half shrubs (native)		2SHRUB	10	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 80% grasses or grass-like plants, 10% forbs and 10% woody plants. The major grasses and grass-like plants include prairie cordgrass, Nebraska sedge, tufted hairgrass and spike sedge. Grasses of lesser importance are western wheatgrass, bearded wheatgrass, Canada wildrye, bluejoint reedgrass and northern reedgrass. Woody plants are mainly snowberry, chokecherry, hawthorn and willows.

The total annual production (air-dry weight) of this state is about 5000 pounds per acre, but it can range from about 3500 lbs / acre in unfavorable years to about 6000 lbs/acre in above average years.

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

Growth curve number: WY1603

Growth curve name: 15-19BL, Free Water Sites

Growth curve description: Free Water Sites

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	25	25	15	10	10	0	0

(Monthly percentages of total annual growth)

The site is extremely resilient and well adapted to the Black Hills Foot Slopes 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 *Western wheatgrass/Kentucky bluegrass Plant Community*.
- Heavy, continuous, improper grazing will convert this plant community to *Kentucky bluegrass/Dandelion Plant Community*.
- Feeding tame hay on this site will convert this site to *Brome/Timothy Plant Community*.

Western wheatgrass/Kentucky bluegrass Plant Community

This plant community evolved under moderate grazing by domestic livestock. Dominant grasses include rhizomatous wheatgrasses, Kentucky bluegrass, spike sedge, and inland sedge. Forbs

commonly found in this plant community include Louisiana sagewort (cudweed), cinquefoil, western yarrow, American licorice, and scarlet globemallow. Willows are common in the overstory.

The total annual production (air-dry weight) of this state is about 2100 pounds per acre, but it can range from about 1800 lbs/ acre in unfavorable years to about 2500 lbs/acre in above average years.

When compared to the Historical Climax Plant Community, prairie cordgrass, Nebraska sedge, bluejoint reedgrass, and northern reedgrass have decreased. Kentucky bluegrass has invaded and western wheatgrass and spike sedge have increased. This site often is invaded by smooth brome and timothy. 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 expected during a normal year:

Growth curve number: WY1603
 Growth curve name: 15-19BL, Free Water Sites
 Growth curve description: Free Water Sites

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	25	25	15	10	10	0	0

Transitional 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* although Kentucky bluegrass will remain a part of the plant community.
- Frequent and Severe grazing will convert this plant community to *the Kentucky bluegrass/Dandelion Plant Community*.

Kentucky Bluegrass/Dandelion Plant Community

This plant community is the result of long-term improper grazing use. This site is dominated by Kentucky bluegrass, dandelion, curly cup gumweed, hawthorn and cheatgrass. The site may be invaded by Russian olive and leafy spurge. Willows are reduced.

The total annual production (air-dry weight) of this state is about 1200 pounds per acre, but it can range from about 900 lbs/ acre in unfavorable years to about 1500 lbs/acre in above average years.

Bare ground has increased. The soil of this site 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: WY1603
 Growth curve name: 15-19BL, Free Water Sites
 Growth curve description: Free Water Sites

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	25	25	15	10	10	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 site to near *Historic Climax Plant Community*.
- Feeding tame hay on this site will convert the site to *Brome/Timothy Plant Community*.

Brome/Timothy Plant Community

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

The total annual production (air-dry weight) of this state is about 3100 pounds per acre, but it can range from about 1200 lbs/ acre in unfavorable years to about 5000 lbs/acre in above average years.

Bare ground has increased. The soil of this site 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: WY1603

Growth curve name: 15-19BL, Free Water Sites

Growth curve description: Free Water Sites

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	15	25	25	15	10	10	0	0

(Monthly percentages of total annual growth)

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

- Changing this site 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.

Western wheatgrass/Kentucky bluegrass 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.

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 61, 15-19 inch Black Hills

COMMON NAME/	SCIENTIFIC NAME	SCI. SYMBOL	Cattle	Sheep	Horses	Mule Deer	Antelope
GRASSES/GRASSLIKES							
alkali bluegrass	<i>Poa secunda ssp. juncea</i>	POSEJ	DDDD	PPPP	DDDD	PPPP	PPPP
alkali cordgrass	<i>Spartina gracilis</i>	SPGR	DDDD	UUUU	DDDD	UUUU	UUUU
alkali sacaton	<i>Sporobolus airoides</i>	SPA1	PPPP	DDDD	PPPP	DDDD	DDDD
bearded wheatgrass	<i>Elymus caninus</i>	ELCA	PPPP	DDDD	PPPP	DDDD	DDDD
Big bluegrass	<i>Poa ampla (syn. To Poa secunda)</i>	POAM (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP
big bluestem	<i>Andropogon gerardii</i>	ANGE	PPPP	PPPP	PPPP	DDDD	DDDD
blue grama	<i>Bouteloua gracilis</i>	BOGR2	DDDD	DDDD	DDDD	DDDD	DDDD
Blue wildrye	<i>Elymus glaucus</i>	ELGL	DDDD	DDDD	DDDD	DDDD	DDDD
bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	PSSP6	PPPP	PPPP	PPPP	DDDD	DDDD
bluejoint reedgrass	<i>Calamagrostis canadensis</i>	CACA4	PPPP	DDDD	PPPP	UUUU	UUUU
buffalograss	<i>Buchloe dactyloides</i>	BUDA	DDDD	DDDD	DDDD	DDDD	DDDD
Canada wildrye	<i>Elymus canadensis</i>	ELCA4	PPPP	PPPP	PPPP	DDDD	DDDD
Canby bluegrass	<i>Poa canbyi (syn. to Poa secunda)</i>	POCA (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP
Columbia needlegrass	<i>Achnatherum nelsonii</i>	ACNE9	PPPP	PPPP	DDDD	DDDD	DDDD
Cusick's bluegrass	<i>Poa cusickii</i>	POCU3	PPPP	PPPP	PPPP	PPPP	PPPP
fowl bluegrass	<i>Poa palustris</i>	POPA2	DDDD	DDDD	DDDD	UUUU	UUUU
green needlegrass	<i>Nassella viridula</i>	NAV14	PPPP	PPPP	PPPP	PPPP	PPPP
hairy grama	<i>Bouteloua hirsuta</i>	BOHI2	DDDD	DDDD	DDDD	DDDD	DDDD
Indian ricegrass	<i>Achnatherum hymenoides</i>	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP
inland saltgrass	<i>Distichlis spicata</i>	DISP	UUUU	UUUU	UUUU	UUUU	UUUU
inland sedge	<i>Carex interior</i>	CAIN11	DDDD	DDDD	DDDD	UUUU	UUUU
little bluestem	<i>Schizachyrium scoparium</i>	SCSC	PPPP	PPPP	PPPP	DDDD	DDDD
mat muhly	<i>Muhlenbergia richardsonis</i>	MURI	UUUU	UUUU	UUUU	UUUU	UUUU
Nebraska sedge	<i>Carex nebraskensis</i>	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD
needleandthread	<i>Hesperostipa comata</i>	HECO26	PPPP	PPPP	PPPP	PPPP	PPPP
needleleaf sedge	<i>Carex duriuscula</i>	CADU6	UUUU	UUUU	UUUU	UUUU	UUUU
northern reedgrass	<i>Calamagrostis stricta</i>	CAS113	PPPP	DDDD	PPPP	UUUU	UUUU
Nuttall's alkaligrass	<i>Puccinellia nuttalliana</i>	PUNU2	PPPP	PPPP	PPPP	PPPP	PPPP
plains reedgrass	<i>Calamagrostis montanensis</i>	CAMO	DDDD	DDDD	DDDD	DDDD	DDDD
prairie cordgrass	<i>Spartina pectinata</i>	SPPE	PPPP	DDDD	PPPP	UUUU	UUUU
prairie junegrass	<i>Koeleria macrantha</i>	KOMA	DDDD	DDDD	DDDD	DDDD	DDDD
prairie sandreed	<i>Calamovilfa longifolia</i>	CALO	PPPP	DDDD	PPPP	UUUU	UUUU
Pumpelly brome	<i>Bromus inermis ssp. pumpellianus</i>	BRINP5	PPPP	PPPP	DDDD	DDDD	UUUU
Richardson's needlegrass	<i>Achnatherum richardsonii</i>	ACRI8	PPPP	DDDD	DDDD	DDDD	DDDD
sand bluestem	<i>Andropogon halli</i>	ANHA	PPPP	DDDD	PPPP	UUUU	UUUU
sand dropseed	<i>Sporobolus cryptandrus</i>	SPCR	DDDD	DDDD	DDDD	UUUU	UUUU
Sandberg bluegrass	<i>Poa secunda</i>	POSE	DDDD	DDDD	DDDD	DDDD	DDDD
sideoats grama	<i>Bouteloua curtipendula</i>	BOCU	PPPP	PPPP	PPPP	DDDD	UUUU
slender wheatgrass	<i>Elymus trachycaulus</i>	ELTR7	PPPP	DDDD	PPPP	DDDD	DDDD
spike oatgrass	<i>Helictotrichon hookeri</i>	HEHO8	PPPP	DDDD	PPPP	DDDD	DDDD
spike sedge	<i>Carex nardina</i>	CANA2	DDDD	DDDD	DDDD	UUUU	UUUU
Spikefescue	<i>Leucopoa kingii</i>	LEK12	PPPP	DDDD	PPPP	PPPP	DDDD
stonehills (plains) muhly	<i>Muhlenbergia cuspidata</i>	MUCU3	UUUU	UUUU	UUUU	UUUU	UUUU
switchgrass	<i>Panicum virgatum</i>	PAVI2	UDPD	UDDU	UDPD	UUUU	UUUU
thickspike wheatgrass	<i>Elymus lanceolatus</i>	ELLAL	DDDD	DDDD	DDDD	DDDD	DDDD
threadleaf sedge	<i>Carex filifolia</i>	CAFI	DDDD	DDDD	DDDD	DDDD	PPPP
threeawn	<i>Aristida spp.</i>	ARIS1	NNNN	NNNN	NNNN	NNNN	NNNN
Timber oatgrass (danthonia)	<i>Danthonia intermedia</i>	DAIN	DDDD	DDDD	DDDD	UUUU	UUUU
tufted hairgrass	<i>Deschampsia caespitosa</i>	DECA18	PPPP	PPPP	PPPP	DDDD	DDDD
western wheatgrass	<i>Pascopyrum smithii</i>	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
FORBS							
alkali (pursh) seepweed	<i>Suaeda calceoliformis</i>	SUCA2	NNNN	NNNN	NNNN	NNNN	NNNN
American licorice	<i>Glycyrrhiza lepidota</i>	GLLE3	UUUU	UUUU	UUUU	UUUU	UUUU
American vetch	<i>Vicia americana</i>	VIAM	PPPP	PPPP	PPPP	PPPP	PPPP
arrowgrass	<i>Triglochin spp.</i>	TRIGL	T	T	T	T	T
biscuitroots	<i>Lomatium spp.</i>	LOMAT	DDDD	DDDD	UUUU	DDDD	DDDD
bluebells	<i>Mertensia</i>	MERTE	DDDD	PPPP	DDDD	DDDD	DDDD
blue-eyed grass	<i>Sisyrinchium spp.</i>	SISYR	DDDD	PPPP	DDDD	DDDD	DDDD
breadroot scurfpea	<i>Pediemelum esculentum</i>	PEES	DDDD	DDDD	DDDD	DDDD	DDDD
cattail, broad-leaf	<i>Typha latifolia</i>	TYLA	DDDD	UUUU	DDDD	UUUU	UUUU
cattail, narrow-leaf	<i>Typha angustifolia</i>	TYAN	DDDD	UUUU	DDDD	UUUU	UUUU
common comandra (toadflax)	<i>Comandra umbellata</i>	COUMP	UUUU	UUUU	UUUU	UUUU	UUUU
cutweed sagewort	<i>Artemisia ludoviciana</i>	ARLU	UUUU	UUUU	UUUU	UUUU	UUUU
deathcamas	<i>Zigadenus venenosus</i>	ZIVE	TTTT	TTTT	TTTT	TTTT	TTTT
dotted gayfeather	<i>Liatris punctata</i>	LIPU	UPPU	UPPU	UPPU	UPPU	UPPU
erigeron (fleabanes)	<i>Erigeron spp.</i>	ERIGE2	UUUU	UUUU	UUUU	UUUU	UUUU
erigonum (buckwheat)	<i>Eriogonum spp.</i>	ERIGO	UUUU	DDDD	UUUU	UUUU	UUUU
fringed sagewort	<i>Artemisia frigida</i>	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU
goldenrod	<i>Oligoneuron</i>	OLIGO3	UUUU	UUUU	UUUU	UUUU	UUUU
green sagewort	<i>Artemisia dracuncul</i>	ARDR4	UUUU	UUUU	UUUU	UUUU	UUUU
gromwell	<i>Buglossoides arvensis</i>	BUAR3	UUUU	UUUU	UUUU	UUUU	UUUU
groundsel	<i>Tephrosia</i>	TEPHR3	UUUU	UUUU	UUUU	UUUU	UUUU
hawksbeard	<i>Crepis acuminata</i>	CRAC2	UUUU	PPPP	UUUU	DDDD	DDDD
horsetails	<i>Equisetum spp.</i>	EQUI5	UUUU	UUUU	UUUU	UUUU	UUUU
iris	<i>Iris spp.</i>	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU
mountain thermopsis	<i>Thermopsis divaricarpa</i>	THDI4	UUUU	UUUU	UUUU	UUUU	UUUU
Nailworts	<i>Paronychia spp.</i>	PARON	UUUU	UUUU	UUUU	UUUU	UUUU
penstemons	<i>Penstemon spp.</i>	PENST	PPPP	PPPP	PPPP	PPPP	PPPP
prairie coneflower	<i>Ratibida columnifera</i>	RACO3	DDDD	PPPP	DDDD	PPPP	PPPP
prairie clovers	<i>Dalea spp.</i>	DALEA	UPPU	UPPU	UPPU	UPPU	UPPU
scurfpeas	<i>Psoraleum spp.</i>	PSORA2	NNNN	UUUU	NNNN	UUUU	UUUU
starwort	<i>Callitriche spp.</i>	CALL16	UUUU	UUUU	UUUU	UUUU	UUUU
stonecrop	<i>Sedum spp.</i>	SEDUM	UUUU	UUUU	UUUU	UUUU	UUUU
twogrooved milkvetch	<i>Astragalus bisulcatus</i>	ASBI2	T	T	T	T	T
violets	<i>Viola spp.</i>	VIOLA	DDDD	DDDD	DDDD	DDDD	DDDD
water hemlocks	<i>Cicuta spp.</i>	CICUT	T	T	T	T	T
western virgin'sbower	<i>Clematis occidentalis</i>	CLOC2	UUUU	DDDD	UUUU	DDDD	DDDD
western wallflower	<i>Erysimum capitatum</i>	ERICAC	DDDD	DDDD	DDDD	DDDD	DDDD
western yarrow	<i>Achillea lanulosa</i>	ACHIL	UUUU	UUUU	UUUU	UUUU	UUUU
wild onion	<i>Allium textile</i>	ALTE	DDDD	DDDD	DDDD	DDDD	DDDD
TREES, SHRUBS & HALF-SHRUBS							
big sagebrush	<i>Artemisia tridentata</i>	ARTR2	UUUU	DDDD	UUUU	DDDD	DDDD
black greasewood	<i>Sarcobatus vermiculatus</i>	SAVE4	DDDD	DDDD	UUUU	DDDD	DDDD
green rabbitbrush	<i>Chrysothamnus viscidiflorous</i>	CHVI8	DDDD	DDDD	DDDD	DDDD	DDDD
plains cottonwood (sprouts)	<i>Populus deltoides</i>	PODEM	DDDD	DDDD	DDDD	DDDD	DDDD
rubber rabbitbrush	<i>Encameria nauseosa</i>	ERNA10	UUUU	DDDD	UUUU	DDDD	DDDD
silver sagebrush	<i>Artemisia cana</i>	ARCA5	DDDD	DDDD	DDDD	PPPP	PPPP
skunkbush sumac	<i>Rhus trilobata</i>	RHTR	DDDD	DDDD	DDDD	DDDD	DDDD
western snowberry	<i>Symphoricarpos occidentalis</i>	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU
wildrose	<i>Rosa woodsii var. woodsii</i>	ROWOW	DDDD	DDDD	UUUU	DDDD	DDDD
willows	<i>Salix L.</i>	SALIX	PPPP	PPPP	DDDD	PPPP	UUUU
winterfat	<i>Krascheninnikovia lanata</i>	KRLA2	PPPP	PPPP	PPPP	PPPP	PPPP
yucca	<i>Yucca glauca</i>	YUGL	DDDD	DDDD	DDDD	DDDD	DDDD

N = not used; U = undesirable; D = desirable; P = preferred; T = toxic

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 (Lbs/acre)	Carrying Capacity* (AUM/ac)
Nebraska sedge, Tufted hairgrass	3500-6000	2.0
Western wheatgrass/Kentucky bluegrass	1800-2500	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.

Other Products

None noted.

Supporting Information

Associated Sites

Wetland	061XY178WY
Lowland	061XY104WY
Overflow	061XY128WY

Similar Sites

(058BY274WY) – Subirrigated 15-17” Northern Plains P.Z. 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 were 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	

State Correlation

This site occurs entirely within Wyoming

Type Locality

Field Offices

Sundance, Newcastle

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:** 61 **Ecological Site:** R061XY174WY Subirrigated (Sb) 15-19"BL 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>Indicators. 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 each community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.</p>
<p>1. Number and extent of rills: Rills should not be present</p>
<p>2. Presence of water flow patterns: Barely observable</p>
<p>3. Number and height of erosional pedestals or terracettes: Essentially non-existent</p>
<p>4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are <i>not</i> bare ground): Bare ground is less than 5%</p>
<p>5. Number of gullies and erosion associated with gullies: Active gullies should not be present</p>
<p>6. Extent of wind scoured, blowouts and/or depositional areas: None</p>
<p>7. Amount of litter movement (describe size and distance expected to travel): Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.</p>
<p>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): 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>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): Use Soil Series description for depth and color of A-horizon</p>
<p>10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff: 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>11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): No compaction layer or soil surface crusting should be present.</p>
<p>12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to): Tall and Mid stature Grasses/grasslikes >> Short stature Grasses/Grasslikes = Forbs = Shrubs</p>
<p>13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Very Low</p>
<p>14. Average percent litter cover and depth : Average litter cover is 50-55% with depths of 0.75 to 1.5 inches</p>
<p>15. Expected annual production (this is all above-ground production, not just forage production): 5000 lbs/ac</p>
<p>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”: Smooth Brome, Kentucky Bluegrass, Dandelion, Spike sedge, Inland sedge, Baltic rush, curlycup gumweed, Hawthorn, Cheatgrass, Russian Olive, and Species found on Noxious Weed List</p>
<p>17. Perennial plant reproductive capability: All species are capable of reproducing</p>