

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Very Shallow (VS) 15-19” Black Hills Precipitation Zone,

**Site ID:** 061XY176WY

**Major Land Resource Area:** 61 – Black Hills Foot Slopes

### Physiographic Features

This site occurs on steep slopes and ridge tops, but may occur on all slopes.

**Landform:** Hill sides, ridges & escarpments      **Aspect:** N/A

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	3500	5000
<b>Slope (percent):</b>	0	60
<b>Water Table Depth (inches):</b>	None within 60 inches	
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	0
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	negligible	high

### 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>
<b>Frost-free period (days) (32°F):</b>	58	93	June 6 – September 7
<b>Freeze-free period (days) (28°F):</b>	95	125	May 18 – September 20
<b>Annual Precipitation (inches):</b>	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

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

**Stream Type:** None

## Representative Soil Features

The soils of this site are very shallow (less than 10”to bedrock) well-drained soils formed in residuum. These soils have rapid to slow permeability and can be of any texture. This site usually occurs on steep slopes, but may be on any slope. The bedrock will include all kinds except soft clay shales, igneous and some volcanic. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick.

**Parent Material Kind:** residuum

**Parent Material Origin:** sandstone, shale, porcelinite

**Surface Texture:** loam, clay loam, clay, channery loam, channery fine sandy loam, fine sandy loam

**Surface Texture Modifier:** none is most common, but channery may occur.

**Subsurface Texture Group:** loam

**Surface Fragments ≤ 3” (% Cover):** 0 to 20

**Surface Fragments > 3” (%Cover):** 0 to 20

**Subsurface Fragments ≤ 3” (% Volume):** typically 0 to 15, occasionally 35 to 75

**Subsurface Fragments > 3” (% Volume):** typically 0, occasionally 5 to 25

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	well	excessive
<b>Permeability Class:</b>	slow	very rapid
<b>Depth (inches):</b>	1	10
<b>Electrical Conductivity (mmhos/cm) ≤20”:</b>	0	4
<b>Sodium Absorption Ratio ≤20”:</b>	0	5
<b>Soil Reaction (1:1 Water) ≤20”:</b>	6.6	8.4
<b>Soil Reaction (0.1M CaCl2) ≤20”:</b>	NA	NA
<b>Available Water Capacity (inches) ≤30”:</b>	0.3	2.0
<b>Calcium Carbonate Equivalent (percent) ≤20”:</b>	0	5

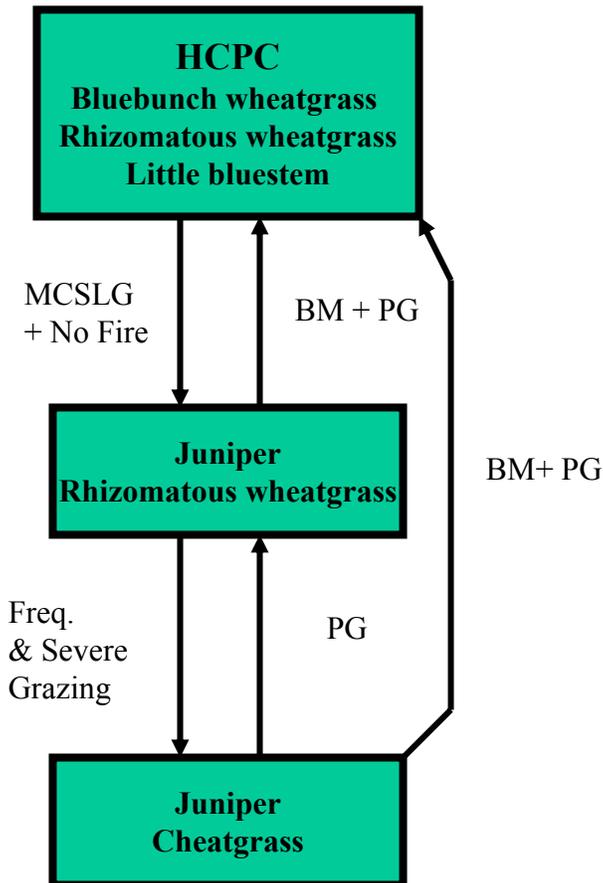
## **Plant Communities**

### **Ecological Dynamics of the Site:**

As this site deteriorates, species such as blue grama and Wyoming big sagebrush will increase. Plains pricklypear and cheatgrass invade. Cool season grasses such as bluebunch wheatgrass, little bluestem, spike fescue, and rhizomatous wheatgrasses 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-tem 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** - found adjacent to a saline site

**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: 700		
<b>GRASSES AND GRASS-LIKES</b>					
<b>GRASSES/GRASSLIKES</b>					
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	PSSP6	1	140 - 245	20 - 35
Little bluestem	<i>Schizachyrium scoparium</i>	SCSC	2	105 - 175	15 - 25
Plains muhly	<i>Muhlenbergia cuspidata</i>	MUCU3	3	35 - 70	5 - 10
Spikefescue	<i>Leucopoa kingii</i>	LEKI2	4	35 - 70	5 - 10
Sideoats grama	<i>Bouteloua curtipendula</i>	BOCU	5	35 - 70	5 - 10
<b>MISC. GRASSES/GRASSLIKES</b>			<b>6</b>	<b>35 - 140</b>	<b>5 - 20</b>
Big bluegrass	<i>Poa ampla</i> (syn. <i>P. secunda</i> )	POAM	6	0 - 35	0 - 5
Big bluestem	<i>Andropogon gerardii</i>	ANGE	6	0 - 35	0 - 5
Blue grama	<i>Bouteloua gracilis</i>	BOGR2	6	0 - 35	0 - 5
Green needlegrass	<i>Nassella viridula</i>	NAVI4	6	0 - 35	0 - 5
Hairy grama	<i>Bouteloua hirsuta</i>	BOHI2	6	0 - 35	0 - 5
Needleandthread	<i>Hesperostipa comata</i>	HECO26	6	0 - 35	0 - 5
Prairie sandreed	<i>Calamovilfa longifolia</i>	CALO	6	0 - 35	0 - 5
Red threeawn	<i>Aristida purpurea</i>	ERCAC	6	0 - 35	0 - 5
Sand bluestem	<i>Andropogon hallii</i>	ANHA	6	0 - 35	0 - 5
Sandberg bluegrass	<i>Poa secunda</i>	POSE	6	0 - 35	0 - 5
Threadleaf sedge	<i>Carex filifolia</i>	CAFI	6	0 - 35	0 - 5
Timber oatgrass	<i>Danthonia intermedia</i>	DAIN	6	0 - 35	0 - 5
Western wheatgrass	<i>Pascopyrum smithii</i>	PASM	6	0 - 35	0 - 5
other perennial grasses (native)		2GP	6	0 - 35	0 - 5
<b>FORBS</b>			<b>7</b>	<b>35 - 105</b>	<b>5 - 15</b>
Buckwheat	<i>Eriogonum</i> spp.	ERIOG	7	0 - 35	0 - 5
Cudweed sagewort	<i>Artemisia ludoviciana</i>	ARLU	7	0 - 35	0 - 5
Fleabane	<i>Erigeron</i> spp.	ERIGE2	7	0 - 35	0 - 5
Fringed sagewort	<i>Artemisia frigida</i>	ARFR4	7	0 - 35	0 - 5
Nailworts	<i>Paronychia</i> spp.	PARON	7	0 - 35	0 - 5
Stoncrop	<i>Sedum</i> spp.	SEDUM	7	0 - 35	0 - 5
other perennial forbs (native)		2FP	7	0 - 35	0 - 5
<b>TREES/SHRUBS</b>					
Big sagebrush	<i>Artemisia tridentata</i>	ARTR2	8	7 - 35	1 - 5
Conifers	<i>Pinus ponderosa</i>	PIPO	9	35 - 70	5 - 10
Hawthorn	<i>Crataegus</i> spp.	CRATA	10	0 - 35	0 - 5
Junipers	<i>Juniperus scopulorum</i>	JUSC2	11	0 - 35	0 - 5
Skunkbush sumac	<i>Rhus trilobata</i>	RHTR	12	0 - 35	0 - 5
other shrubs & half shrubs (native)		2SHRUB	13	0 - 35	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.

#### Bluebunch wheatgrass/Rhizomatous wheatgrass/Little bluestem Plant Community

The interpretive plant community for this site is the Historic Climax Plant Community (HCPC). This state evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 70% grasses or grass-like plants, 10% forbs, and 20% woody plants. The state is dominated by cool season midgrasses. The major grasses include bluebunch wheatgrass, rhizomatous wheatgrasses, needleandthread, and little bluestem. Other grasses occurring on the state include Sandberg bluegrass, spike fescue, big bluestem, prairie sandreed, blue grama, and sideoats grama. Wyoming big sagebrush, juniper and ponderosa pine may become dominant on some areas with absence of fire. Natural fire occurred frequently in this community and prevented big sagebrush, junipers and conifers from being the dominant landscape.

The total annual production (air-dry weight) of this state is about 700 pounds per acre, but it can range from about 500 lbs/acre in unfavorable years to about 900 lbs/acre in above average years.

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

Growth curve number: WY1601

Growth curve name: 15-19BL, Upland Sites

Growth curve description: All Upland Sites

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	15	5	10	5	0	0

(Monthly percentages of total annual growth)

The state is stable and well adapted to the Black Hills Foot Slopes climatic conditions. The diversity in plant species allows for high drought resistance. This is a 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 and lack of fire, will convert this plant community to the *Juniper/Rhizomatous wheatgrass Plant Community*.
- Frequent and severe grazing will convert the plant community to the *Juniper/Cheatgrass Plant Community*.

#### Juniper/Rhizomatous wheatgrass Plant Community

Historically, this plant community evolved under grazing by bison and a high fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush control. Wyoming big sagebrush, junipers and conifers are significant components of this plant community.

Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs.

Dominant grasses include rhizomatous wheatgrasses, plains muhly, and blue grama. Grasses of secondary importance include little bluestem, prairie junegrass, Sandberg bluegrass, and cheatgrass. Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, prairie thermopsis, and scarlet globemallow. Wyoming big sagebrush, Juniper and conifer canopy ranges up to 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historical Climax Plant Community, Wyoming big sagebrush, junipers, and ponderosa pine have increased. Bluebunch wheatgrass has decreased, often occurring only where protected from grazing by the sagebrush canopy. Production of cool-season grasses has also been reduced. Cheatgrass (downy brome) has invaded. The overstory of Wyoming big sagebrush, juniper, conifers, and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

The total annual production (air-dry weight) of this state is about 350 pounds per acre, but it can range from about 250 lbs/acre in unfavorable years to about 500 lbs/acre in above average years.

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

Growth curve number: WY1601

Growth curve name: 15-19BL, Upland Sites

Growth curve description: All Upland Sites

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	15	5	10	5	0	0

(Monthly percentages of total annual growth)

The state is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. However, it can be at risk depending on how far a shift has occurred in plant composition toward big sagebrush, junipers, conifers, and cheatgrass. The watershed is usually functioning. However, it can become at risk when canopy cover of big sagebrush, junipers, conifers, and bare ground increases.

Transitional pathways leading to other plant communities are as follows:

- Brush management (fire) followed by prescribed grazing will return this state to near *Historic Climax Plant Community*.
- Frequent and severe grazing over the long-term will convert this state to the *Juniper/Cheatgrass Plant Community*.

### Juniper/Cheatgrass Plant Community

This vegetation state currently is found under heavy, season-long grazing by livestock in the absence of fire or brush control. Wyoming big sagebrush, junipers, and ponderosa pine are significant components of this plant community. Cool-season grasses have been reduced. Bare ground and cool-season annual plants dominate the understory.

Perennial grasses are sparse, and include rhizomatous wheatgrasses, plains muhly, and blue grama. Grasses of secondary importance include little bluestem, prairie junegrass, and Sandberg bluegrass. Cheatgrass is the dominant grass. Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, prairie thermopsis, and scarlet globemallow.

Wyoming big sagebrush, Juniper and conifer canopy ranges up to 50%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historical Climax Plant Community, sagebrush, junipers, and ponderosa pine have increased. Bluebunch wheatgrass has decreased, often occurring only where protected from grazing by the sagebrush canopy. Production of cool-season grasses has also been reduced. Cheatgrass (downy brome) has invaded. Bare ground has increased. The overstory of big sagebrush, juniper, and conifers reduce the grass understory and reduce the states ability to support livestock and wildlife.

The total annual production (air-dry weight) of this state is about 275 pounds per acre, but it can range from about 250 lbs/acre in unfavorable years to about 300 lbs/acre in above average years.

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

Growth curve number: WY1601

Growth curve name: 15-19BL, Upland Sites

Growth curve description: All Upland Sites

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	20	40	15	5	10	5	0	0

(Monthly percentages of total annual growth)

The state is unstable and is not protected from excessive erosion. The biotic integrity of this plant community is not intact. This state is at risk depending on how far a shift has occurred in plant composition toward big sagebrush, junipers, conifers, and cheatgrass. The watershed is not functioning.

Transitional pathways leading to other plant communities are as follows:

- Brush management (fire) and prescribed grazing will return this state to near *Historic Climax Plant Community*.
- Prescribed grazing will return this state to the *Juniper/Rhizomatous wheatgrass Plant Community*.

## Ecological Site Interpretations

### Animal Community – Wildlife Interpretations

**Historic Climax Plant Community:** The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Suitable thermal and escape cover for deer may be limited due to the low quantities of woody plants. However, topographical variations could provide some escape cover. 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, and golden eagles. Many grassland obligate small mammals would occur here.

**Juniper/Rhizomatous wheatgrass:** 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 sagebrush states. The juniper provides good thermal cover and bird nesting habitat.

**Juniper/Cheatgrass:** 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 production is low and less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to sagebrush states. The juniper provides good thermal cover and bird nesting habitat.

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
<b>GRASSES/GRASSLIKES</b>							
alkali bluegrass	<i>Poa secunda</i> ssp. <i>juncifolia</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</i> (syn. <i>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</i> (syn. <i>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</i> spp. <i>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</i> spp.	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
<b>FORBS</b>							
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</i> spp.	TRIGL	T	T	T	T	T
biscuitroots	<i>Lomatium</i> spp.	LOMAT	DDDD	DDDD	UUUU	DDDD	DDDD
bluebells	<i>Mertensia</i>	MERTE	DDDD	PPPP	DDDD	DDDD	DDDD
blue-eyed grass	<i>Sisyrinchium</i> spp.	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</i> spp.	ERIGE2	UUUU	UUUU	UUUU	UUUU	UUUU
erigonum (buckwheat)	<i>Eriogonum</i> spp.	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</i> spp.	EQUI5	UUUU	UUUU	UUUU	UUUU	UUUU
iris	<i>Iris</i> spp.	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU
mountain thermopsis	<i>Thermopsis divaricarpa</i>	THDI4	UUUU	UUUU	UUUU	UUUU	UUUU
Nailworts	<i>Paronychia</i> spp.	PARON	UUUU	UUUU	UUUU	UUUU	UUUU
penstemons	<i>Penstemon</i> spp.	PENST	PPPP	PPPP	PPPP	PPPP	PPPP
prairie coneflower	<i>Ratibida columnifera</i>	RACO3	DDDD	PPPP	DDDD	PPPP	PPPP
prairie clovers	<i>Dalea</i> spp.	DALEA	UPPU	UPPU	UPPU	UPPU	UPPU
scurfpeas	<i>Psoraleum</i> spp.	PSORA2	NNNN	UUUU	NNNN	UUUU	UUUU
starwort	<i>Callitriche</i> spp.	CALL16	UUUU	UUUU	UUUU	UUUU	UUUU
stonecrop	<i>Sedum</i> spp.	SEDUM	UUUU	UUUU	UUUU	UUUU	UUUU
twogrooved milkvetch	<i>Astragalus bisulcatus</i>	ASBI2	T	T	T	T	T
violets	<i>Viola</i> spp.	VIOLA	DDDD	DDDD	DDDD	DDDD	DDDD
water hemlocks	<i>Cicuta</i> spp.	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
<b>TREES, SHRUBS &amp; HALF-SHRUBS</b>							
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 viscidiflorus</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</i> var. <i>woodsii</i>	ROWOW	DDDD	DDDD	UUUU	DDDD	DDDD
willows	<i>Salix</i> L.	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)
Historic Climax Plant Community	700-900	.2
Juniper/rhizomatous wheatgrass	250-500	.15
Juniper/Cheatgrass	250-300	.05

\* - 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

Water is the principal factor limiting forage production on this site. This site is highly variable and is dominated by soils in hydrologic group B and C, with localized areas in hydrologic group D. Infiltration ranges from slow to very rapid. Runoff potential for this site varies from moderate to high depending on soil hydrologic group, slope and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. 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 may be present, but should be small. Water flow patterns should be barely distinguishable. Pedestals are only slightly present in association with bunchgrasses such as bluebunch wheatgrass. 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

Shallow Loamy	061XY162WY
Shallow Clayey	061XY158WY

### Similar Sites

(058BY276WY) – Very Shallow 15-17” Northern Plains P.Z. has less bluebunch wheatgrass and more rhizomatous wheatgrass.

### 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	Crook& others
Ocular estimates		1990-1999	WY	Crook& others

### State Correlation

This site occurs entirely within Wyoming.

### Type Locality

### Field Offices

Newcastle, Sundance

### Relationship to Other Established Classifications

### Other References

### Site Description Approval

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State Range Management Specialist

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Date

## Ecological Reference Worksheet

**Author(s)/participant(s):** \_\_\_\_\_  
**Contact for lead author:** \_\_\_\_\_ **Reference site used? Yes/No**  
**Date:**   4/05   **MLRA:**   61   **Ecological Site:** R061XY176WY Very Shallow (VS) 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><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> Due to the wide slope range associated with this site, the number and extent of rills will vary from none on slope &lt; 9% to common on slopes &gt; 25%</p>
<p><b>2. Presence of water flow patterns:</b> Due to the wide slope range associated with this site, water flow patterns vary from barely observable on slopes of &lt; 9% from broken and irregular in appearance to continuous on slopes &gt; 25%</p>
<p><b>3. Number and height of erosional pedestals or terracettes:</b> Not evident on slopes &lt; 9% present on slopes &gt; 9%</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 35-45%</p>
<p><b>5. Number of gullies and erosion associated with gullies:</b> Active restricted to concentrated water flow patterns on steeper slopes</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 on slopes &lt; 9%. Litter movement does occur on slopes &gt; 9%</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 55% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 4 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. Infiltration varies with soil texture from slow to very 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> Mid stature Cool Season Grasses &gt;&gt; Mid stature Warm Season Grasses &gt; Shrubs/Trees &gt; Forbs &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> Some plant mortality and decadence is expected</p>
<p><b>14. Average percent litter cover and depth :</b> Average litter cover is 15-20% with depths of 0.10 to 0.25 inches</p>
<p><b>15. Expected annual production (this is all above-ground production, not just forage production):</b> 700 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> Blue grama, Wyoming big sagebrush, Cheatgrass, Junipers, Ponderosa pine, Fringed sagewort, Prickly pear, and Species found on Noxious Weed List</p>
<p><b>17. Perennial plant reproductive capability:</b> May be limited due to effective moisture and seed to soil contact</p>