United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Very Shallow (VS) 10-14" Northern Plains Precipitation Zone,

Site ID: 058BY176WY

Major Land Resource Area: 58B – Northern Rolling High Plains

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

	Minimum	Maximum
Elevation (feet):	3800	5100
Slope (percent):	0	60
Water Table Depth (inches):	None within 60 inches	
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	0	0
Frequency:	None	None
Duration:	None	None
Runoff Class:	negligible	high

Climatic features
Annual precipitation ranges from 10-14 inches per year. Wide fluctuations may occur in yearly precipitation and result in more drought 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 from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Wind speed averages about 8 mph, ranging from 10 mph during the spring to 7 mph during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 75 mph.

Growth of native cool season plants begins about April 1 and continues to about July 1. Native warm season plants begin growth about May 15 and continue to about August 15. Green up of cool season plants may occur in September and October of most years.

The following information is from the "Clearmont 5 SW" climate station:

Frost-free period (32 °F): 76 - 132 days; (5 yrs. out of 10, these days will occur between May 30 – September 11)
Freeze-free period 28 °F): 110 - 145 days; (5 yrs. out of 10, these days will occur between May 16 – September 21)
Mean annual precipitation: 12.4 inches
Mean annual air temperature: 43.2 °F (28.4°F Avg. Min. – 57.9°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: "Dull Center"

Influencing Water Features

Wetland Description:	**System**	**Subsystem**	**Class**	**Sub-class**
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.

Major Soil Series correlated to this site include: Samday cool, Shingle, Hilight, Taluce, Tassel, Wibaux

Other Soil Series in MLRA 58B correlated to this site include: Fairburn, Iron Butte, Mitten Butte, Samsil, Lismas.

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 to20
Subsurface Fragments ≤ 3" (% Volume): typically 0 to 15, occasionally 35 to 75
Subsurface Fragments > 3" (% Volume): typically 0, occasionally 5 to 25

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

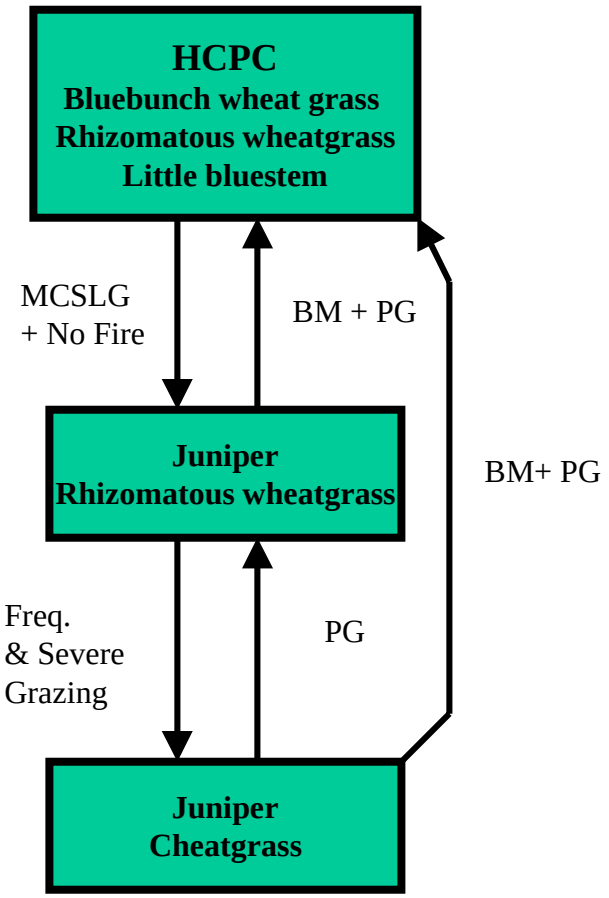
Plant Communities

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 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 DYNAMICS
REFERENCE PLANT COMMUNITY

COMMON NAME/ GROUP NAME	SCIENTIFIC NAME	SCIENTIFIC SYMBOL	Grp	Allowable Annual Production lbs./acre below normal	normal	above normal	% Comp (MAX.)
				250	350	500	
GRASSES/GRASSLIKES							
RHIZOMATOUS WHEATGRASSES:			1	25	35	50	10%
thickspike wheatgrass	Elymus lanceolatus	ELLAL	1	25	35	50	10%
western wheatgrass	Pascopyrum smithii	PASM	1	25	35	50	10%
OTHER GRASSES							
big bluestem	Andropogon gerardii	ANGE	2	13	18	25	5%
bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6	3	125	175	250	50%
Indian ricegrass	Achnatherum hymenoides	ACHY	5	13	18	25	5%
little bluestem	Schizachyrium scoparium	SCSC	7	25	35	50	10%
needleandthread	Hesperostipa comata	HECO26	8	25	35	50	10%
Canby bluegrass	Poa canbyi (syn. to Poa secunda)	POCA (POSE)	9	13	18	25	5%
Cusick's bluegrass	Poa cusickii	POCU3	10	25	35	50	10%
blue grama	Bouteloua gracilis	BOGR2	11	13	18	25	5%
hairy grama	Bouteloua hirsuta	BOHI2	12	13	18	25	5%
MISCELLANEOUS GRASSES/GRASSLIKES*		PPGG	13	38	53	75	15%
plains reedgrass	Calamagrostis montanensis	CAMO	13	13	18	25	5%
prairie junegrass	Koeleria macrantha	KOMA	13	13	18	25	5%
prairie sandreed	Calamovilfa longifolia	CALO	13	13	18	25	5%
sand dropseed	Sporobolus cryptandrus	SPCR	13	13	17.5	25	5%
Sandberg bluegrass	Poa secunda	POSE	13	13	18	25	5%
bottlebrush squirreltail	Elymus elymoides	ELEL5	13	13	18	25	5%
plains muhly	Muhlenbergisa cuspidata	MUCU3	13	13	18	25	5%
threadleaf sedge	Carex filifolia	CAFI	13	13	18	25	5%
Fendler threeawn	Aristida purpurea	ARPUL	13	13	18	25	5%
FORBS							
MISCELLANEOUS FORBS*		PPFF	14	25	35	50	10%
American vetch	Vicia americana	VIAM	14	13	18	25	5%
prairie coneflower	Ratibida columnifera	RACO3	14	13	18	25	5%
asters	Asters	ASTER	14	13	18	25	5%
biscuitroots	Lomatium spp.	LOMAT	14	13	18	25	5%
breadroot scurfpea	Pediomelum esculentum	PEES	14	13	18	25	5%
western yarrow	Achillea lanulosa	ACHIL	14	13	18	25	5%
rosy pussytoes	Antennaria rosea	ANRO2	14	13	18	25	5%
milkvetches	Astragalus	ASTRA	14	13	18	25	5%
stemless goldenweed	Haplopappus acaulis	HAAC	14	13	18	25	5%
sulphur flower buckwheat	Eriogonum umbellatum	ERUM	14	13	18	25	5%
scarlet gaura	Gaura coccinea	GACO5	14	13	18	25	5%
prairie thermopsis	Thermopsis rhombifolia	THRHA	14	13	18	25	5%
purple prairie clover	Dalea purpurea	DAPU5	14	13	18	25	5%
white prairie clover	Dalea candida	DACA7	14	13	18	25	5%
bluebells	Mertensia	MERTE	14	13	18	25	5%
wild onion	Allium textile	ALTE	14	13	18	25	5%
hawksbeard	Crepis acuminata	CRAC2	14	13	18	25	5%
TREES, SHRUBS & HALF-SHRUBS*			15	50	70	100	20%
big sagebrush	Artemisia tridentata	ARTR2	15	13	18	25	5%
junipers	Juniperus scopulorum	JUSC2	15	13	18	25	5%
skunkbush sumac	Rhus trilobata	RHTR	15	30	50	65	5%
ponderosa pine	Pinus ponderosa	PIPO	15	13	18	25	5%

* Common native perennials are listed. Other native perennials may also be counted but no species in the group may be counted for more than 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. 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 Cusick's and Sandberg bluegrass, big bluestem, prairie sandreed, blue grama, and prairie junegrass. Wyoming big sagebrush is a conspicuous element of this state, occurs in a mosaic pattern, and makes up 5 to 10% of the annual production. Wyoming big sagebrush, juniper and conifers 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 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:
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 stable and well adapted to the Northern Great Plains 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 Vegetation State.*

- Frequent and severe grazing will convert the plant community to the *Juniper/Cheatgrass Vegetation State.*

Juniper/rhizomatous wheatgrass

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 canopy ranges from 20% to 30%. Juniper and conifer canopy ranges up to 20%. Fringed sagewort is commonly found. Plains pricklypear can also occur.
When compared to the Historical Climax Plant Community, Wyoming big sagebrush, junipers and conifers 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 which will support domestic livestock and wildlife such as mule deer and antelope.

The total annual production (air-dry weight) of this state is about 325 pounds per acre, but it can range from about 250 lbs./acre in unfavorable years to about 400 lbs./acre in above average years.

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 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 Vegetation State.*

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 conifers 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.

Big sagebrush canopy ranges from 20% to 30%. 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 conifers 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:
Growth curve name:
Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	15	30	30	10	5	5	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 state.*

Animal Preferences (Quarterly - 1,2,3,4) for commonly occuring plants in MLRA 58B, 10-14 inch Northern Plains

COMMON NAME/ GROUP NAME	SCIENTIFIC NAME	SCIENTIFIC SYMBOL	*Cattle*	*Sheep*	*Horses*	*Mule Deer*	*Antelope*
GRASSES/GRASSLIKES							
alkali bluegrass	Poa secunda ssp. juncifolia	POSEJ	DDDD	PPPP	DDDD	PPPP	PPPP
alkali cordgrass	Spartina gracilis	SPGR	DDDD	UUUU	DDDD	UUUU	UUUU
alkali sacaton	Sporobolus airoides	SPAI	PPPP	DDDD	PPPP	DDDD	DDDD
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 bluestem	Andropogon gerardii	ANGE	PPPP	PPPP	PPPP	DDDD	DDDD
blue grama	Bouteloua gracilis	BOGR2	DDDD	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
buffalograss	Buchloe dactyloides	BUDA	DDDD	DDDD	DDDD	DDDD	DDDD
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
Cusick's bluegrass	Poa cusickii	POCU3	PPPP	PPPP	PPPP	PPPP	PPPP
Fendler threeawn	Aristida purpurea	ARPUL	UUUU	UUUU	UUUU	UUUU	UUUU
green needlegrass	Nassella viridula	NAVI4	PPPP	PPPP	PPPP	PPPP	PPPP
hairy grama	Bouteloua hirsuta	BOHI2	DDDD	DDDD	DDDD	DDDD	DDDD
Indian ricegrass	Achnatherum hymenoides	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP
inland saltgrass	Distichlis spicata	DISP	UUUU	UUUU	UUUU	UUUU	UUUU
inland sedge	Carex interior	CAIN11	DDDD	DDDD	DDDD	UUUU	UUUU
little bluestem	Schizachyrium scoparium	SCSC	PPPP	PPPP	PPPP	DDDD	DDDD
mat muhly	Muhlenbergia richardsonis	MURI	UUUU	UUUU	UUUU	UUUU	UUUU
Nebraska sedge	Carex nebraskensis	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD
needleandthread	Hesperostipa comata	HECO26	PPPP	PPPP	PPPP	PPPP	PPPP
needleleaf sedge	Carex duriuscula	CADU6	UUUU	UUUU	UUUU	UUUU	UUUU
northern reedgrass	Calamagrostis stricta	CAST13	PPPP	DDDD	PPPP	UUUU	UUUU
Nuttall's alkaligrass	Puccinellia nuttaliana	PUNU2	PPPP	PPPP	PPPP	PPPP	PPPP
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
prairie sandreed	Calamovilfa longifolia	CALO	PPPP	DDDD	PPPP	UUUU	UUUU
sand bluestem	Andropogon halli	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	ELTR7	PPPP	DDDD	PPPP	DDDD	DDDD
spike sedge	Carex nardina	CANA2	DDDD	DDDD	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
western wheatgrass	Pascopyrum smithii	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
FORBS							
American licorice	Glycyrrhiza lepidota	GLLE3	UUUU	UUUU	UUUU	UUUU	UUUU
American vetch	Vicia americana	VIAM	PPPP	PPPP	PPPP	PPPP	PPPP
arrowgrass	Triglochin spp.	TRIGL	T	T	T	T	T
asters	Asters	ASTER	UUUU	UUUU	UUUU	UUUU	UUUU
biscuitroots	Lomatium spp.	LOMAT	DDDD	DDDD	UUUU	DDDD	DDDD
bluebells	Mertensia	MERTE	DDDD	PPPP	DDDD	DDDD	DDDD
blue-eyed grass	Sisyrinchium spp.	SISYR	DDDD	PPPP	DDDD	DDDD	DDDD
breadroot scurfpea	Pediomelum esculentum	PEES	DDDD	DDDD	DDDD	DDDD	DDDD
cattail, broad-leaf	Typha latifolia	TYLA	DDDD	UUUU	DDDD	UUUU	UUUU
cattail, narrow-leaf	Typha angustifolia	TYAN	DDDD	UUUU	DDDD	UUUU	UUUU
fringed sagewort	Artemisia frigida	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU
green sagewort	Artemisia dracunculus	ARDR4	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
milkvetches	Astragalus	ASTRA	DDDD	DDDD	DDDD	DDDD	DDDD
poison hemlock	Conium maculatum	COMA2	T	T	T	T	T
prairie coneflower	Ratibida columnifera	RACO3	DDDD	PPPP	DDDD	PPPP	PPPP
prairie thermopsis	Thermopsis rhombifolia	THRHA	UUUU	UUUU	UUUU	UUUU	UUUU
purple prairie clover	Dalea purpurea	DAPU5	PPPP	PPPP	PPPP	PPPP	PPPP
Pursh seepweed	Suaeda calceoliformis	SUCA2	UUUU	UUUU	UUUU	UUUU	UUUU
rosy pussytoes	Antennaria rosea	ANRO2	UUUU	UUUU	UUUU	UUUU	UUUU
scarlet gaura	Gaura coccinea	GACO5	UUUU	UUUU	UUUU	UUUU	UUUU
stemless goldenweed	Haplopappus acaulis	HAAC	UUUU	UUUU	UUUU	UUUU	UUUU
sulphur flower buckwheat	Eriogonum umbellatum	ERUM	UUUU	UUUU	UUUU	UUUU	UUUU
twogrooved milkvetch	Astragalus bisulcatus	ASBI2	T	T	T	T	T
water hemlocks	Cicuta spp.	CICUT	T	T	T	T	T
western yarrow	Achillea lanulosa	ACHIL	UUUU	UUUU	UUUU	UUUU	UUUU
white prairie clover	Dalea candida	DACA7	PPPP	PPPP	PPPP	PPPP	PPPP
wild onion	Allium textile	ALTE	DDDD	DDDD	DDDD	DDDD	DDDD
TREES, SHRUBS & HALF-SHRUBS							
big sagebrush	Artemisia tridentata	ARTR2	UUUU	DDDD	UUUU	DDDD	DDDD
birdfoot sagebrush	Artemisia pedatifida	ARPE6	UUUU	UUUU	UUUU	UUUU	UUUU
black greasewood	Sarcobatus vermiculatus	SAVE4	DDDD	DDDD	UUUU	DDDD	DDDD
fourwing saltbush	Atriplex canescens	ATCA2	PPPP	PPPP	PPPP	PPPP	PPPP
Gardners saltbush	Atriplex gardneri	ATGA	PPPP	PPPP	DDDD	PPPP	PPPP
green rabbitbrush	Chrysothamnus viscidiflorous	CHVI8	DDDD	DDDD	DDDD	DDDD	DDDD
junipers	Juniperus scopulorum	JUSC2	UUUU	UUUU	UUUU	DDDD	UUUU
plains cottonwood (sprouts)	Populous deltoides	PODEM	DDDD	DDDD	DDDD	DDDD	DDDD
ponderosa pine (abortion in cattle)	Pinus ponderosa	PIPO	UUUU	UUUU	UUUU	UUUU	UUUU
rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DDDD	UUUU	DDDD	DDDD
silver sagebrush	Artemisia cana	ARCAC5	DDDD	DDDD	DDDD	PPPP	PPPP
silverberry	Eleagnus commutata	ELCO	UUUU	UUUU	UUUU	DDDD	UUUU
skunkbush sumac	Rhus trilobata	RHTR	DDDD	DDDD	DDDD	DDDD	DDDD
western snowberry	Symphoricarpos occidentalis	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU
wildrose	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

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

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 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)
Historic Climax Plant Community	250-500	.15
Juniper/rhizomatous wheatgrass	250-400	.12
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. 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 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 058BY162WY
Shallow Clayey 058BY158WY

Similar Sites
() – Very Shallow 15-17" Northern Plains P.Z. 058BY276WY
[Higher 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. Those involved in developing this site include: Glen Mitchell, Range Management Specialist, NRCS; Chuck Ring, Range Management Specialist, NRCS; and Everet Bainter, Range Management Specialist. 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

Data Source	Number of Records	Sample Period	State	County
SCS-RANGE-417	12	1971-1994	WY	Campbell & others
Ocular estimates	5	1990-1999	WY	Campbell & others

State Correlation
This site has been correlated with Montana in MLRA 58B.

Type Locality

Field Offices
Buffalo, Douglas, Gillette, Lusk, Newcastle, Sheridan

Relationship to Other Established Classifications

Other References

Site Description Approval

_____ _____
State Range Management Specialist Date

_____ _____
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:** ___58B__ **Ecological Site:** R058BY176WY Very Shallow (VS) 10-14"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.

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.
1. Number and extent of rills: Due to the wide slope range associated with this site, the number and extent of rills will vary from none on slope < 9% to common on slopes > 25%
2. Presence of water flow patterns: Due to the wide slope range associated with this site, water flow patterns vary from barely observable on slopes of < 9% from broken and irregular in appearance to continuous on slopes > 25%
3. Number and height of erosional pedestals or terracettes: Not evident on slopes < 9% present on slopes > 9%
4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are *not* bare ground): Bare ground is 40-50%
5. Number of gullies and erosion associated with gullies: Active restricted to concentrated water flow patterns on steeper slopes
6. Extent of wind scoured, blowouts and/or depositional areas: None
7. Amount of litter movement (describe size and distance expected to travel): Little to no plant litter movement on slopes < 9%. Litter movement does occur on slopes > 9%
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 50% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 4 or greater.
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
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. Infiltration varies with soil texture from slow to very rapid.
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.
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): Mid stature Cool Season Grasses >> Mid stature Warm Season Grasses > Short stature Grasses/Grasslikes > Shrubs/Trees > Forbs
13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Some plant mortality and decadence is expected
14. Average percent litter cover and depth : Average litter cover is 10-15% with depths of 0.10 to 0.25 inches
15. Expected annual production (this is all above-ground production, not just forage production): 350 lbs/ac
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": Broom Snakeweed, Threadleaf sedge, Threeawns, and Species found on Noxious Weed List.
17. Perennial plant reproductive capability: May be limited due to effective moisture and seed to soil contact