

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Coarse Upland (CU) 5-9” Wind River Basin Precipitation Zone

Site ID: R032XY208WY

Major Land Resource Area: 32 – Northern Intermountain Desertic Basins

Physiographic Features

This site occurs on gently undulating rolling land.

Landform: Hillsides, alluvial fans, ridges & stream terraces

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	4500	6600
Slope (percent):	0	30
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 5-9 inches per year. The normal precipitation pattern shows peaks in May and June and a secondary peak in September. This amounts to about 50% of the mean annual precipitation. Much of the moisture that falls in the latter part of the summer is lost by evaporation and much of the moisture that falls during the winter is lost by sublimation. Average snowfall is about 20 inches annually. 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, 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.

High winds are generally blocked from the basin by high mountains, but can occur in conjunction with an occasional thunderstorm.

Growth of native cool-season plants begins about April 1 and continues to about July 1. Cool weather and moisture in September may produce some green up of cool season plants that will continue to late October.

The following information is from the “Pavillion” climate station:

	<u>Minimum</u>	<u>Maximum</u>	<u>5 yrs. out of 10 between</u>
Frost-free period (days):	95	175	May 19 – September 19
Freeze-free period (days):	98	185	May 6 – October 3
Mean Annual Precipitation (inches):	2.50	12.54	

Mean annual precipitation: 7.85 inches

Mean annual air temperature: 44.53°F (30.5°F Avg. Min. to 58.5°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 “Riverton”, “Arminto”, and “Lost Cabin”.

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: None

Representative Soil Features

The soils of this site are deep to moderately deep (greater than 20" to bedrock), moderately well to somewhat excessively well-drained & moderately slow to moderately rapid permeability. This site consists of bouldery to cobbly coarse fragment soils. The soil surface can be covered extensively with these coarse fragments and as such, plant density can be reduced. The soil characteristics most influential to the plant community are volume of coarse fragments in the profile that reduces the available moisture and the extensive cover of these coarse fragments, which can reduce the plant density.

Major Soil Series correlated to this site includes:

Other Soil Series correlated to this site in MLRA 32 include:

Parent Material Kind: alluvium and residuum

Parent Material Origin: sandstone, shale

Surface Texture: loam, silt loam, very fine sandy loam,

Surface Texture Modifier: cobbly or bouldery

Subsurface Texture Group: loam

Surface Fragments ≤ 3" (% Cover): 5 to 25

Surface Fragments > 3" (%Cover): 0 to 10

Subsurface Fragments ≤ 3" (% Volume): 0 to 25

Subsurface Fragments > 3" (% Volume): > 35

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	well	somewhat excessively well
Permeability Class:	moderately slow	moderately rapid

Site Type: Rangeland
MLRA: 32 – Northern Intermountain Desertic Basins

**Coarse Upland (CU) 5-9WR
R032XY208WY**

Depth (inches):	20	>60
Electrical Conductivity (mmhos/cm) ≤ 20" :	0	4
Sodium Absorption Ratio ≤ 20" :	0	5
Soil Reaction (1:1 Water) ≤ 20" :	7.4	8.4
Soil Reaction (0.1M CaCl₂) ≤ 20" :	NA	NA
Available Water Capacity (inches) ≤ 30" :	2.8	6.0
Calcium Carbonate Equivalent (percent) ≤ 20" :	0	30

Plant Communities

Ecological Dynamics of the Site:

Potential vegetation on this site is dominated by mid cool-season perennial grasses. Other significant vegetation includes big sagebrush, rubber rabbitbrush and a variety of forbs. The expected potential composition for this site is about 70% grasses, 15% forbs and 15% woody plants. The composition and production will vary naturally due to historical use, fluctuating precipitation and fire frequency.

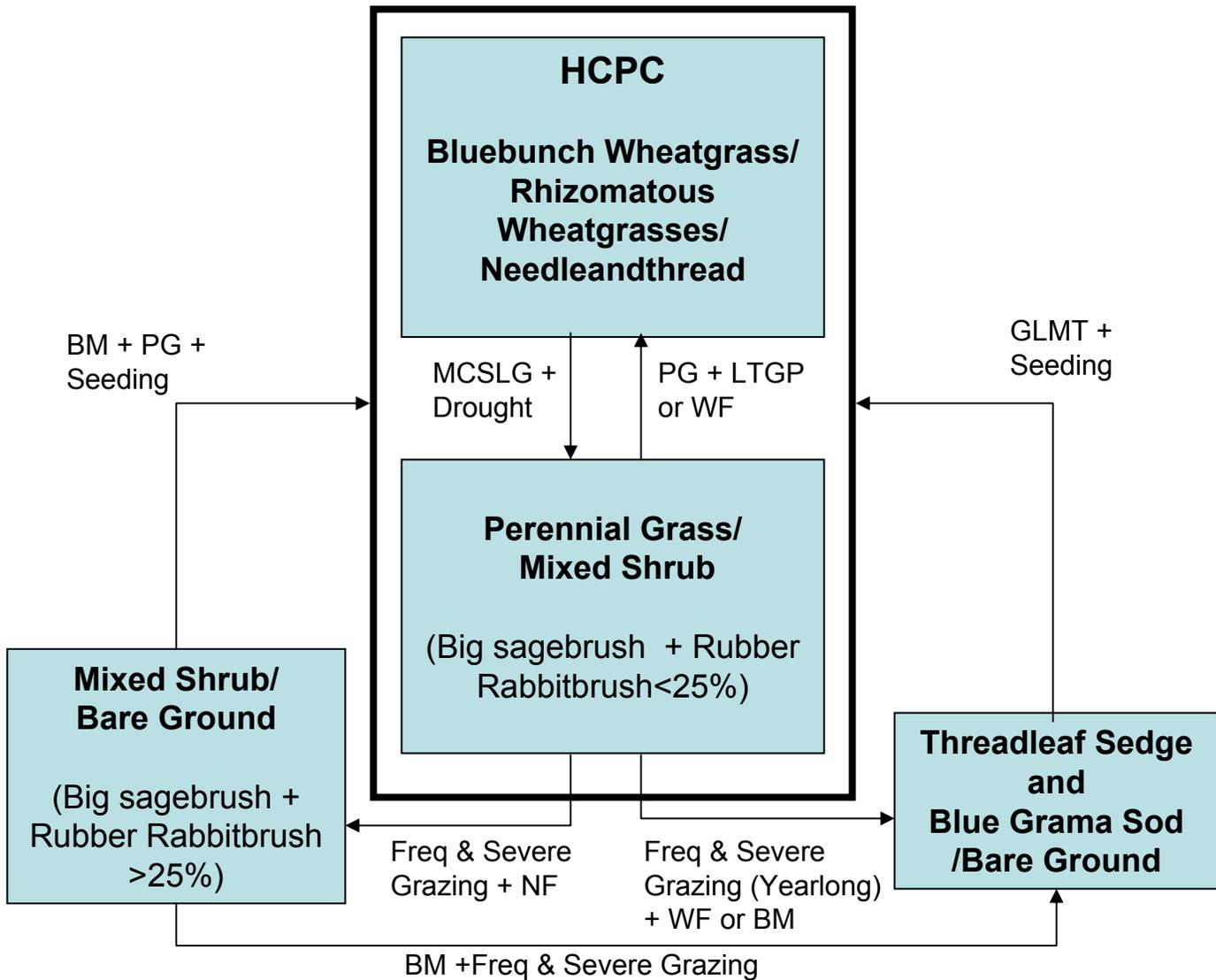
As this site deteriorates species such as threadleaf sedge, Sandberg bluegrass, blue grama, and big sagebrush will increase. Weedy annuals will invade. Cool-season grasses such as bluebunch wheatgrass, rhizomatous wheatgrasses, and needleandthread will decrease in frequency and production.

Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

Due to the amount and pattern of the precipitation, the big sagebrush component typically is not resilient once it has been removed if a healthy and vigorous stand of grass exists and is maintained. The exception to this is where the herbaceous component is severely degraded at the time of treatment, growing conditions are unfavorable after treatment, and/or recovery periods are inadequate.

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)
- WF** - Wildfire (Natural or Human Caused)

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: 300		
GRASSES AND GRASS-LIKES					
GRASSES/GRASSLIKES					
Griffiths wheatgrass or	Elymus albicans	ELAL7	1	105 - 150	35 - 50
Bluebunch wheatgrass	Pseudoroegneria spicata	PSSP6			
Western wheatgrass	Pascopyrum smithii	PASM	2	30 - 60	10 - 20
Needleandthread grass	Hesperostipa comata	HECO26	3	30 - 60	10 - 20
Indian ricegrass	Achnatherum hymenoides	ACHY	4	15 - 30	5 - 10
MISC. GRASSES/GRASSLIKES			5	15 - 45	5 - 15
Prairie junegrass	Koeleria macrantha	KOMA	5	0 - 15	0 - 5
Sandberg bluegrass	Poa secunda	POSE	5	0 - 15	0 - 5
Threadleaf sedge	Carex filifolia	CAFI	5	0 - 15	0 - 5
Blue grama	Bouteloua gracilis	BOGR2	5	0 - 15	0 - 5
Red threeawn	Aristida purpurea	ARPUL	5	0 - 15	0 - 5
other perennial grasses (native)		2GP	5	0 - 15	0 - 5
FORBS			6	15 - 45	5 - 15
Scarlet globemallow	Sphaeralcea coccinea	SPCO	6	0 - 15	0 - 5
Waxleaf penstemon	Penstemon nitida	PENI3	6	0 - 15	0 - 5
Fringed sagewort	Artemisia frigida	ARFR4	6	0 - 15	0 - 5
Fuzzytongue penstemon	Penstemon erianthus	PEER	6	0 - 15	0 - 5
Small-leaf pussytoes	Antennaria parvifolia	ANPA4	6	0 - 15	0 - 5
Hood's phlox	Phlox hoodii	PHHO	6	0 - 15	0 - 5
Miner's candle	Cryptantha virgata	CRVI4	6	0 - 15	0 - 5
Sulphur flower buckwheat	Eriogonum umbellatum	ERUM	6	0 - 15	0 - 5
Western yarrow	Achillea lanulosa	ACHIL	6	0 - 15	0 - 5
Aster	Eucephalus spp.	EUCEP2	6	0 - 15	0 - 5
Little larkspur	Delphinium bicolor	DEBI	6	0 - 15	0 - 5
Wavyleaf paintbrush	Castilleja applegatei martinii	CAAPM	6	0 - 15	0 - 5
Plains pricklypear cactus	Opuntia polyacantha	OPPO	6	0 - 15	0 - 5
other perennial forbs (native)		2FP	6	0 - 15	0 - 5
TREES/SHRUBS					
Wyoming big sagebrush	Artemisia tridentata wyomingensis	ARTRW8	7	0 - 30	0 - 10
MISC. SHRUBS			8	15 - 30	5 - 10
Rubber rabbitbrush	Ericameria nauseosa	ERNA10	8	0 - 15	0 - 5
Green rabbitbrush	Chrysothamnus viscidiflorus	CHVI8	8	0 - 15	0 - 5
Shadscale saltbush	Atriplex confertifolia	ATCO	8	0 - 15	0 - 5
Utah juniper	Juniperus osteosperma	JUOS	8	0 - 15	0 - 5
Skunkbush sumac	Rhus trilobata	RHTR	8	0 - 15	0 - 5
other shrubs & half shrubs (native)		2SHRUB	8	0 - 15	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 Wheatgrasses/Needleandthread Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This state evolved with grazing by large herbivores and periodic fires. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest. The potential vegetation is about 70% grasses or grass-like plants, 15% forbs, and 15% woody plants. This state is dominated by cool season mid-grasses.

The major grasses include bluebunch wheatgrass, rhizomatous wheatgrasses, and needleandthread. Other grasses occurring in this state include Indian ricegrass and Sandberg bluegrass. Varieties of forbs occur on this site, as shown in the preceding table. Big sagebrush, skunkbush sumac, and rubber rabbitbrush are conspicuous species in this plant community. These shrubs occur in a mosaic pattern, and make up 15% of the annual production. Plant diversity is high (see Plant Composition Table).

The total annual production (air-dry weight) of this state is about 300 lbs./acre, but it can range from about 200 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	50	25	5	0	10	0	0	0

(Monthly percentages of total annual growth)

This plant community is extremely stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. 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 will convert the plant community to the *Perennial Grass/Mixed Shrub Plant Community*. Prolonged Drought will exacerbate this transition.

Perennial Grass/Mixed Shrub Plant Community

Historically, this plant community evolved under grazing by large ungulates and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock, and will be exacerbated by prolonged drought conditions. In addition the fire regime for this site has been modified and extended periods without fire is now common. Big sagebrush and rubber rabbitbrush 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 grasses, and miscellaneous forbs.

Dominant grasses include bluebunch wheatgrass, needleandthread, and western wheatgrass. Grasses and grass-likes of secondary importance include threadleaf sedge, blue grama, Sandberg bluegrass, and red threeawn. Forbs commonly found in this plant community include scarlet globemallow, Hood’s phlox, sulfur flower buckwheat, and penstemon spp. Sagebrush and rubber rabbitbrush can make up to 25% of the total annual production. Plains pricklypear can also occur.

When compared to the Historic Climax Plant Community, sagebrush, rubber rabbitbrush, blue grama, and threadleaf sedge have increased. Production of cool-season grasses, particularly bluebunch wheatgrass and Indian ricegrass, has been reduced. Some weedy species may have invaded the site but are in small patches. The overstory of sagebrush 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 250 pounds per acre, but it can range from about 150 lbs./acre in unfavorable years to about 350 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	50	25	5	0	10	0	0	0

(Monthly percentages of total annual growth)

This plant community is resistant to change. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. The herbaceous component is mostly intact and plant vigor and replacement capabilities are sufficient. Water flow patterns and litter movement may be occurring but only on steeper slopes. Incidence of pedestalling is minimal. Soils are mostly stable and the surface shows minimum soil loss. The watershed is functioning and the biotic community is intact.

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

- Prescribed grazing or possibly long-term prescribed grazing will convert this plant community to the HCPC. The probability of this occurring is high especially if rotational grazing along with short deferred grazing is implemented as part of a prescribed method of use. In addition, the removal of fire suppression will allow a somewhat natural fire regime to reoccur to more easily transition between this plant community and the HCPC. A prescribed fire treatment can be useful to hasten this transition if desired.

- Frequent and severe grazing plus no fires will convert the plant community to the *Mixed Shrub Bare Ground Vegetation State*. The probability of this occurring is high. This is especially evident on areas where drought or heavy browsing does not adversely impact the shrub stand.
- Frequent and severe grazing (yearlong) plus wildfire or brush management, will convert the plant community to a *Threadleaf Sedge and Blue Grama Sod/ Bare Ground Vegetation State*. The probability of this occurring is high especially on areas were the shrubs have been heavily browsed or removed by natural or human causes. Drought can also exacerbate this transition.

Mixed Shrub/Bare Ground Plant Community

This plant community is the result of frequent and severe grazing and protection from fire. Sagebrush and rubber rabbitbrush dominate this plant community as the annual production of shrubs is in excess of 25%. Shrubs comprise the significant component of the plant community and the preferred cool season grasses have been eliminated or greatly reduced.

The dominant grasses are Sandberg bluegrass, threadleaf sedge, and blue grama. Weedy annual species such as cheatgrass, kochia, Russian thistle, halogeton and a variety of mustards may occupy the site. Cactus has increased. Noxious weeds such as Russian knapweed, leafy spurge, or Canada thistle may invade the site if a seed source is available. Plant diversity is moderate to poor. The interspaces between plants have expanded leaving the amount of bare ground more prevalent. When compared with the HCPC or the Mixed Shrub/ Perennial Grass Plant Communities, the annual production is similar, as the shrub production compensates for the decline in the herbaceous production.

The total annual production (air-dry weight) of this state is about 200 pounds per acre, but it can range from about 100 lbs./acre in unfavorable years to about 300 lbs./acre in above average years.

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

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	50	25	5	0	10	0	0	0

(Monthly percentages of total annual growth)

This plant community is resistant to change as the stand becomes more decadent. These areas may actually be more resistant to fire as less fine fuels are available and the bare ground between the shrubs is increased. The herbaceous component is not as diverse and plant vigor and species regeneration capabilities of cool-season perennials are deficient. The removal of grazing does not seem to affect the plant composition or structure of the plant community.

Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestalling are obvious. Infiltration is reduced and runoff is increased. Rill channels may be noticeable in the interspaces and gullies may be establishing where rills have concentrated down slope.

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

- Brush management, followed by prescribed grazing and seeding, will return this plant community to at or near the *HCPC*. If prescribed fire is used as a means to reduce or remove

the shrubs, sufficient fine fuels will need to be present. This may require deferment from grazing prior to treatment. Post management is critical to ensure success. This can range from two or more years of rest to partial growing season deferment, depending on the condition of the understory at the time of treatment and the growing conditions following treatment. In the case of an intense wildfire that occurs when desirable plants are not completely dormant, the length of time required to reach the *HCPC* may be increased and seeding of natives are recommended.

- Brush management, followed by frequent and severe grazing, will convert the plant community to a *threadleaf Sedge and Blue Grama Sod/ Bare Ground Vegetation State*. The probability of this occurring is high, because of the amount of bare ground exposed to weedy annuals and sod formers as the competition for space, has been removed.

Threadleaf Sedge and Blue Grama Sod/Bare Ground Plant Community

This plant community is created when the Mixed Shrub/Perennial Grass Plant Community is subjected to severe heavy yearlong grazing and the shrub component has been removed by heavy browsing, wildfire or human means. Additionally, this plant community can occur as a result of the Shrub/Bare Ground Plant Community being subjected to fire or brush management and not followed by prescribed grazing. Weedy annuals, threadleaf sedge, and/or blue grama are the most dominant plants. Weedy annuals occupy any open bare ground areas, while threadleaf sedge and/or blue grama form patches of sod in between the exposed boulders or cobbles. Rubber rabbitbrush may or may not be present on this site as this species may quickly re-establish the site after a fire. However, heavy browsing by large ungulates will significantly reduce or remove this shrub from this site.

Compared to the *HCPC*, weedy annual species are widespread and may include cheatgrass, kochia, Russian thistle, halogeton and a variety of mustards. Cactus has increased significantly. Noxious weeds such as Russian knapweed, leafy spurge, or Canada thistle may invade the site if a seed source is available. Virtually all other cool-season mid-grasses are absent or severely decreased. Blue grama and threadleaf sedge have significantly increased from what is found in the *HCPC*. Shrubs have been removed with the exception of patches of rubber rabbitbrush. Plant diversity is low.

The total annual production (air-dry weight) of this state is about 90 pounds per acre, but it can range from about 50 lbs./acre in unfavorable years to about 125 lbs./acre in above average years.

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

Growth curve number:

Growth curve name:

Growth curve description:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	10	50	25	5	0	10	0	0	0

(Monthly percentages of total annual growth)

This plant community is relatively stable and resistant to overgrazing. Annuals and sod forming grasses are effectively competing against the establishment of perennial cool-season grasses. Plant diversity is greatly altered and the herbaceous component is not intact. Recruitment of perennial grasses is not occurring and the replacement potential is absent. The biotic integrity is missing.

On areas with a well established sod plant community, water infiltration will be significantly affected. While this sod protects the area itself, adjacent on-site and off-site areas are impacted by excessive

runoff that can cause rill channels and gully erosion. Water flow patterns and pedestalling are obvious. The watershed may or may not be functional.

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

- Grazing land mechanical treatment (chiseling, etc.) and pricklypear cactus control (if needed), followed by prescribed grazing, will return this plant community to near *Historic Climax Plant Community* condition. The sod areas are extremely resistant to change and will require grazing land mechanical treatments, such as chiseling to revert to a more preferred state. This may not be possible given the presence of cobbles or boulders on the soil surface, which can also exclude reseeding the area. If applicable, mechanical treatments and reseeding native plant species are recommended. This should be followed by proper grazing management to accelerate recovery where few desirable plants remain.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

Bluebunch Wheatgrass/Rhizomatous Wheatgrasses/Needleandthread Plant Community

(HCPC): 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.

Perennial Grass/Mixed Shrub Plant Community: The combination of an overstory of sagebrush and an understory of grasses and forbs provide a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows' nest in big sagebrush plants, and hosts of other nesting birds utilize stands in the 20-30% cover range.

Mixed Shrub/Bare Ground Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community provides nesting and brood rearing habitat for sage grouse.

Threadleaf Sedge and Blue Grama Sod/Bare Ground Plant Community: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Western Wheatgrass/Cheatgrass Plant Community is limiting. Generally, these are not target plant communities for wildlife habitat management.

Animal Preferences (Quarterly - 1,2,3,4) for commonly occurring plants in MLRA 32XY, 5-9 inch Wind River Basin

COMMON NAME/ GROUP NAME	SCIENTIFIC NAME	SCIENTIFIC SYMBOL	Cattle	Sheep	Horses	Mule Deer	Antelope
GRASSES/GRASSLIKES							
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>	SPAI	PPPP	DDDD	PPPP	DDDD	DDDD
American manna grass	<i>Glyceria grandis</i>	GLGR	DDDD	UUUU	DDDD	UUUU	UUUU
American sloughgrass	<i>Beckmannia syzigachne</i>	BESY	DDDD	UUUU	DDDD	UUUU	UUUU
Baltic rush	<i>Juncus balticus</i>	JUBA	DDDD	UUUU	DDDD	UUUU	UUUU
basin wildrye	<i>Leymus cinereus</i>	LECI4	PPPP	PPPP	PPPP	DDDD	DDDD
beaked sedge	<i>Carex rostrata</i>	CARO6	DDDD	UUUU	DDDD	UUUU	UUUU
bearded wheatgrass	<i>Elymus caninus</i>	ELCA	PPPP	DDDD	PPPP	DDDD	DDDD
big bluegrass	<i>Poa ampla</i> (syn. to <i>Poa secunda</i>)	POAM (POSE)	PPPP	PPPP	PPPP	PPPP	PPPP
blue grama	<i>Bouteloua gracilis</i>	BOGR2	DDDD	DDDD	DDDD	DDDD	DDDD
bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	PSSP6	PPPP	PPPP	PPPP	DDDD	DDDD
bottlebrush squirreltail	<i>Elymus elymoides</i>	ELELE	DDDD	DDDD	DDDD	UUUU	UUUU
bulrush	<i>Scirpus</i> spp.	SCIRP	DDDD	UUUU	DDDD	UUUU	UUUU
Canada wildrye	<i>Elymus canadensis</i>	ELCA4	PPPP	PPPP	PPPP	DDDD	DDDD
Fendler threawn	<i>Aristida purpurea longiseta</i>	ARPUL	UUUU	UUUU	UUUU	UUUU	UUUU
Indian ricegrass	<i>Achnatherum hymenoides</i>	ACHY	PPPP	PPPP	PPPP	PPPP	PPPP
inland saltgrass	<i>Distichlis spicata</i>	DISP	UUUU	UUUU	UUUU	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 nebrascensis</i>	CANE2	PPPP	PPPP	PPPP	DDDD	DDDD
needleandthread	<i>Hesperostipa comata</i>	HECO26	PPPP	PPPP	PPPP	PPPP	PPPP
northern reedgrass	<i>Calamagrostis stricta</i>	CAST13	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
reed canarygrass	<i>Phalaris arundinacea</i>	PHAR3	DDDD	UUUU	DDDD	UUUU	UUUU
rush	<i>Juncus</i> spp.	JUNCU	DDDD	UUUU	DDDD	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
slender wheatgrass	<i>Elymus trachycaulus</i>	ELTR7	PPPP	DDDD	PPPP	DDDD	DDDD
spike sedge	<i>Carex nardina</i>	CANA2	DDDD	DDDD	DDDD	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
tufted hairgrass	<i>Deschampsia caespitosa</i>	DECA18	PPPP	PPPP	PPPP	DDDD	DDDD
water sedge	<i>Carex aquatilis</i>	CAAQ	DDDD	UUUU	DDDD	UUUU	UUUU
western wheatgrass	<i>Pascopyrum smithii</i>	PASM	DDDD	DDDD	DDDD	DDDD	DDDD
FORBS							
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
asters	<i>Aster</i> spp.	ASTER	UUUU	UUUU	UUUU	UUUU	UUUU
badlands mule-ears	<i>Wyethia scabra</i>	WYSC	UUUU	UUUU	UUUU	UUUU	UUUU
beaked skeletonweed	<i>Shinnersoseris rostrata</i>	SHRO2	UUUU	UUUU	UUUU	UUUU	UUUU
biscuitroots	<i>Lomatium</i> spp.	LOMAT	DDDD	DDDD	UUUU	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
buttercandle	<i>Cryptantha celosiodes</i>	CRCE	UUUU	UUUU	UUUU	UUUU	UUUU
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
desert princesplume	<i>Stanleya pinnata</i>	STPIP	T	T	T	T	T
Douglas' dusty maiden	<i>Chaenactis douglasii</i>	CHDO	UUUU	UUUU	UUUU	UUUU	UUUU
fleabane	<i>Erigeron</i> spp.	ERIGU	UUUU	UUUU	UUUU	UUUU	UUUU
foothills deathcamas	<i>Zigadenus paniculatus</i>	ZIPA2	T	T	T	T	T
fringed sagewort	<i>Artemisia frigida</i>	ARFR4	UUUU	UUUU	UUUU	UUUU	UUUU
green sagewort	<i>Artemisia dracunculus</i>	ARDR4	UUUU	UUUU	UUUU	UUUU	UUUU
hawkbeard	<i>Crepis acuminata</i>	CRAC2	UUUU	PPPP	UUUU	DDDD	DDDD
horsetails	<i>Equisetum</i> spp.	EQUIS	UUUU	UUUU	UUUU	UUUU	UUUU
Indian paintbrush	<i>Castilleja</i> spp.	CASTI2	DDDD	DDDD	DDDD	DDDD	DDDD
iris	<i>Iris</i> spp.	IRIS	UUUU	UUUU	UUUU	UUUU	UUUU
larkspur	<i>Delphinium</i> spp.	DELPH	DDDD	DDDD	DDDD	DDDD	DDDD
licorice-root	<i>Ligusticum</i> spp.	LIGUS	UUUU	UUUU	UUUU	UUUU	UUUU
lupine	<i>Lupinus</i> spp.	LUPIN	DDDD	T	DDDD	DDDD	DDDD
milkvetch	<i>Astragalus</i> spp.	ASTRA	DDDD	DDDD	DDDD	DDDD	DDDD
miner's candle	<i>Cryptantha virgata</i>	CRV14	UUUU	UUUU	UUUU	UUUU	UUUU
mustard	<i>Brassica</i> spp.	BRASS2	UUUU	UUUU	UUUU	UUUU	UUUU
nailwort	<i>Paronychia</i> spp.	PARON	UUUU	UUUU	UUUU	UUUU	UUUU
Nuttall's povertyweed	<i>Monolepis nuttalliana</i>	MONU	UUUU	UUUU	UUUU	UUUU	UUUU
penstemon	<i>Penstemon</i> spp.	PENST	PPPP	PPPP	PPPP	PPPP	PPPP
phlox	<i>Phlox</i> spp.	PHLOX	UUUU	UUUU	UUUU	UUUU	UUUU
plains springparsley	<i>Cymopterus acaulis</i>	CYAC	UUUU	DDDD	UUUU	UUUU	UUUU
poison hemlock	<i>Conium maculatum</i>	COMA2	T	T	T	T	T
prairie bluebells	<i>Mertensia lanceolata</i>	MELA3	DDDD	PPPP	DDDD	DDDD	DDDD
Pursh seepweed	<i>Suaeda calceoliformis</i>	SUCA2	UUUU	UUUU	UUUU	UUUU	UUUU
rosy pussytoes	<i>Antennaria rosea</i>	ANRO2	UUUU	UUUU	UUUU	UUUU	UUUU
sandwort	<i>Arenaria</i> spp.	ARENA	UUUU	UUUU	UUUU	UUUU	UUUU
silverweed cinquefoil	<i>Argentina anserina</i>	ARAN7	UUUU	UUUU	UUUU	UUUU	UUUU
stemless goldenweed	<i>Haplopappus acaulis</i>	HAAC	UUUU	UUUU	UUUU	UUUU	UUUU
sulphur flower buckwheat	<i>Eriogonum umbellatum</i>	ERUM	UUUU	UUUU	UUUU	UUUU	UUUU
tufted evening-primrose	<i>Oenothera caespitosa</i>	OECA10	UUUU	UUUU	UUUU	UUUU	UUUU
twogrooved milkvetch	<i>Astragalus bisulcatus</i>	ASBI2	T	T	T	T	T
water hemlocks	<i>Cicuta</i> spp.	CICUT	T	T	T	T	T
western buttercup	<i>Ranunculus occidentalis</i>	ROAOC	DDDD	DDDD	DDDD	DDDD	DDDD
western dock	<i>Rumex aquaticus</i>	RUAQ	UUUU	UUUU	UUUU	UUUU	UUUU
western yarrow	<i>Achillea lanulosa</i>	ACHIL	UUUU	UUUU	UUUU	UUUU	UUUU
wild onion	<i>Allium textile</i>	ALTE	DDDD	DDDD	DDDD	DDDD	DDDD
woodyaster	<i>Xylorhiza</i> spp.	XYLOR	T	T	T	T	T
woolly plantain	<i>Plantago patagonica</i>	PLPA2	UUUU	UUUU	UUUU	UUUU	UUUU

TREES, SHRUBS & HALF-SHRUBS								
big sagebrush	Artemisia tridentata	ARTR2	UUUU	DDDD	UUUU	DDDD	DDDD	DDDD
birdfoot sagebrush	Artemisia pedatifida	ARPE6	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
black greasewood	Sarcobatus vermiculatus	SAVE4	DDDD	DDDD	UUUU	DDDD	DDDD	DDDD
black sagebrush	Artemisia nova	ARNO4	DDDD	PPPP	UUUU	PPPP	PPPP	PPPP
broom snakeweed	Gutierrezia sarothrae	GUSA2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
bud sagebrush	Picrothamnus desertorum	PIDE4	PPPP	PPPP	DDDD	PPPP	PPPP	PPPP
fourwing saltbush	Atriplex canescens	ATCA2	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
Gardners saltbush	Atriplex gardneri	ATGA	PPPP	PPPP	DDDD	PPPP	PPPP	PPPP
green rabbitbrush	Chrysothamnus viscidiflorus	CHV18	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
plains cottonwood (sprouts)	Populus deltoides	PODEM	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
Rocky Mountain juniper	Juniperus scopulorum	JUSC2	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU
rubber rabbitbrush	Ericameria nauseosa	ERNA10	UUUU	DDDD	UUUU	DDDD	DDDD	DDDD
shadscale saltbush	Atriplex confertifolia	ATCO	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
shortspine horsebrush	Tetradymia spinosa	TESP2	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
silver sagebrush	Artemisia cana	ARCAC5	DDDD	DDDD	DDDD	PPPP	PPPP	PPPP
silverberry	Eleagnus commutata	ELCO	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU
skunkbush sumac	Rhus trilobata	RHTR	DDDD	DDDD	DDDD	DDDD	DDDD	DDDD
spiny hopsage	Grayia spinosa	GRSP	UUUU	UUUU	UUUU	UUUU	UUUU	UUUU
Utah juniper	Juniperus osteosperma	JUOS	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU
wax currant	Ribes cereum	RICE	UUUU	UUUU	UUUU	DDDD	DDDD	DDDD
western snowberry	Symphoricarpos occidentalis	SYOC	UUUU	UUUU	UUUU	DDDD	UUUU	UUUU
wildrose	Rosa woodsii var. woodsii	ROWOW	DDDD	DDDD	UUUU	DDDD	DDDD	DDDD
willows	Salix spp.	SALIX	PPPP	PPPP	DDDD	PPPP	UUUU	UUUU
winterfat	Krascheninnikovia lanata	KRLA2	PPPP	PPPP	PPPP	PPPP	PPPP	PPPP
yucca	Yucca glauca	YUGL	DDDD	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 (lb./ac)	Carrying Capacity* (AUM/ac)
Bluebunch WG/Rhizomatous WG/Needleandthread	200-400	.1
Perennial Grass/Mixed Shrub	140-340	.08
Mixed Shrub/Bare Ground	100-300	.05
Threadleaf Sedge & Blue Grama Sod/B. Ground	50-125	.03

* - 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 dominated by soils in hydrologic group B and C, with localized areas in hydrologic group D. Infiltration ranges from moderately slow to moderate. Runoff potential for this site varies from low to moderate 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

Shallow Sandy	032XY266WY
Sandy	032XY250WY
Shallow Clayey	032XY258WY
Gravelly	032XY212WY
Lowland	032XY228WY

Similar Sites

() – Coarse Upland 10-14” Foothills and Basins East P.Z., 032XY308WY has higher production.

Inventory Data References (narrative)

Information presented here has been derived from NRCS inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Chris Krassin, Range Management Specialist, NRCS and Everet Bainter, Range Management Specialist, NRCS. Other sources used as references include USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, USDI and USDA Interpreting Indicators of Rangeland Health Version 3, and USDA NRCS Soil Surveys from various counties.

Inventory Data References

Ocular field estimations observed by trained personnel.

State Correlation

This site occurs entirely within Wyoming.

Type Locality

Field Offices

Casper, Lander, Riverton, Fort Washakie, Dubois

Relationship to Other Established Classifications

Other References

Site Description Approval

State Range Management Specialist

Date