USDA Natural Resources Conservation Service

Ecological site R061XY130WY
Overflow (Ov) 15-19" Precipitation Zone, Black Hills

Accessed: 05/12/2025

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R061XW104WY	**Clayey-West (16-20" PZ)**
R061XY128WY	**Lowland (LL) 15-19" Precipitation Zone, Black Hills**
R061XY174WY	**Subirrigated (Sb) 15-19" Precipitation Zone, Black Hills**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

Physiographic Features
This site occurs on areas that receive additional water from overflow of intermittent streams or runoff from adjacent slopes.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Stream terrace
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Frequent
Ponding frequency	None
Elevation	1,067–1,524 m
Slope	0–6%
Ponding depth	0 cm
Water table depth	152 cm
Aspect	Aspect is not a significant factor

Climatic features

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:

Minimum Maximum 5 yrs. out of 10 between
Frost-free period (days) (32°F): 58 93 June 6 – September 7
Freeze-free period (days) (28°F): 95 125 May 18 – September 20
Annual Precipitation (inches): 14.81 20.17

Mean annual precipitation: 17.66 inches
Mean annual air temperature: 44.4 F (28.6 F Avg. Min. to 60.1 F Avg. Max.)
For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at http://www.wcc.nrcs.usda.gov/ website. Other climate station(s) representative of this precipitation zone include ”Hulett” and “Sundance”.

Table 3. Representative climatic features

Frost-free period (average)	93 days
Freeze-free period (average)	125 days
Precipitation total (average)	508 mm

Influencing water features

Influencing Water Features

Wetland Description: System Subsystem Class Sub-class
None None None None None

Stream Type: C
(Rosgen type)

Soil features

Representative Soil Features
The soils of this site are deep to very deep well-drained soils formed in mixed alluvium. Layers of the soil most influential to the plant community varies from 3 to 6 inches thick. These soils have moderate to rapid permeability. The surface soil will vary from 2 to 8 inches in thickness and will be one or more of the following textures: very fine sandy loam, fine sandy loam, sandy loam, loam, silt loam, clay loam, and silty clay loam. These areas receive additional water from overflow of intermittent streams or runoff from adjacent slopes.

Parent Material Kind: alluvium
Parent Material Origin: sandstone, shale
Surface Texture: loam, clay loam, clay, fine sandy loam, sandy loam, loamy sand, silt loam
Surface Texture Modifier: none
Subsurface Texture Group: loam
Surface Fragments < 3” (% Cover): 0
Surface Fragments > 3” (%Cover): 0
Subsurface Fragments < 3” (% Volume): 0
Subsurface Fragments > 3” (% Volume): 0

Minimum Maximum
Drainage Class: moderately well excessive
Permeability Class: moderate rapid
Depth (inches): 20 >60
Electrical Conductivity (mmhos/cm) <20”: 0 8
Sodium Absorption Ratio <20”: 0 10
Soil Reaction (1:1 Water) <20”: 6.6 8.4
Soil Reaction (0.1M CaCl2) <20”: NA NA
Available Water Capacity (inches) <30”: 2 6.2
Calcium Carbonate Equivalent (percent) <20”: 0 5

Table 4. Representative soil features

Surface texture	(1) Loam (2) Clay loam (3) Clay
Family particle size	(1) Loamy
Drainage class	Moderately well drained to excessively drained
Permeability class	Moderate to rapid
Soil depth	51–152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	5.08–15.75 cm
Calcium carbonate equivalent (0-101.6cm)	0–5%
Electrical conductivity (0-101.6cm)	0–8 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–10

Soil reaction (1:1 water) (0-101.6cm)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Ecological Dynamics of the Site:

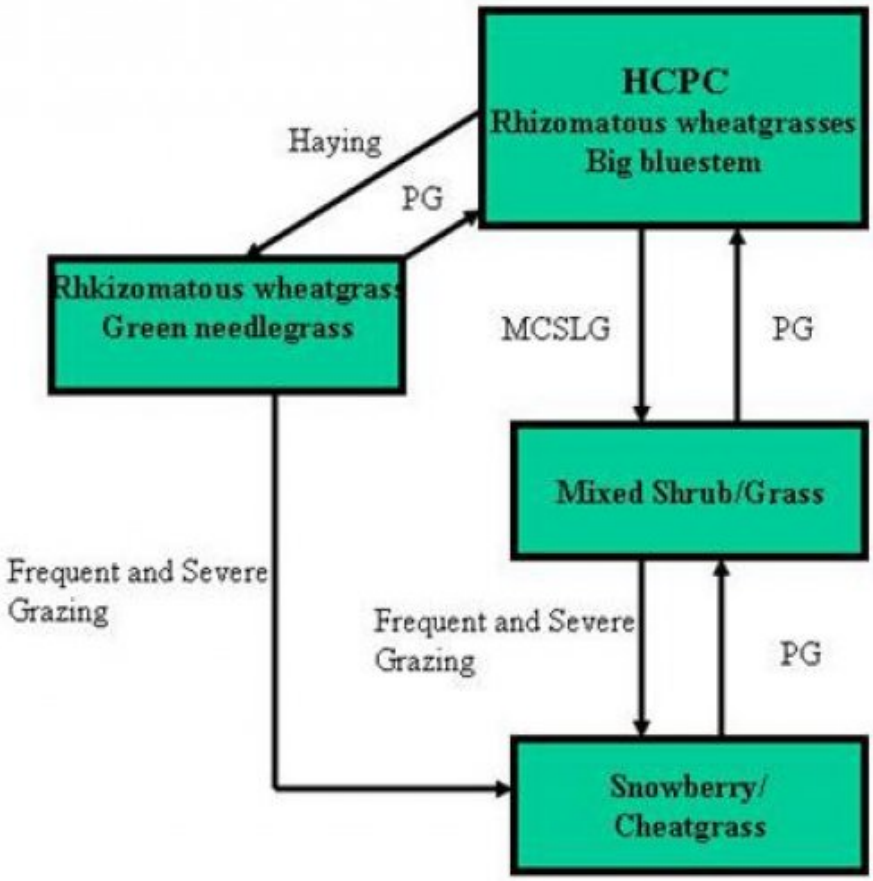
As this site deteriorates, species such as American licorice, western yarrow, green sagewort and snowberry will increase and species such as Kentucky bluegrass and annuals will invade. Grasses such as big bluestem, green needlegrass, slender wheatgrass and western wheatgrass will decrease in frequency 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.

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.

State and transition model



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 - Moderate Sodium in Soil

State 1
Rhizomatous wheatgrasses Big Bluestem

Community 1.1
Rhizomatous wheatgrasses Big Bluestem

Rhizomatous Wheatgrasses/ Big 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 75% grasses or grass-like plants, 15% forbs and 10% woody plants. The major grasses include big bluestem, rhizomatous wheatgrasses, slender wheatgrass, and green needlegrass. Other grasses occurring on the state include Canby bluegrass, needleandthread, Richardson's needlegrass, and mat muhly. Forbs commonly found in this plant community include prairie clovers, American licorice, western yarrow, and green sagewort. Woody plants include chokecherry, hawthorn, American plum and snowberry. The total annual production (air-dry weight) of this state is about 3000 pounds per acre, but it can range from about 2000 lbs/acre in unfavorable years to about 4000 lbs/acre in above average years. The following is the growth curve of this plant community expected during a normal year: Growth curve number: WY1602 Growth curve name: 15-19BL, Extra Water Sites Growth curve description: Extra Water Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 25 20 10 15 5 0 0 (Monthly percentages of total annual growth) This plant community is extremely stable and well adapted to the Black Hills Foot Slopes 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 Mixed shrub/Grass Plant Community. • Frequent and Severe grazing will convert this plant community to the Snowberry/Cheatgrass Plant Community. • Haying will convert the plant community to the Western wheatgrass/Green needlegrass Plant Community.

Figure 4. Plant community growth curve (percent production by month). WY1602, 15-19BL Extra water sites - LL, Ov, CyO, SL.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	25	20	10	15	5	0	0

State 2
Mixed Shrub/ Grass

Community 2.1
Mixed Shrub/ Grass

Mixed Shrub/Grass Plant Community This plant community evolved under moderate grazing by domestic livestock. 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, Kentucky bluegrass, Richardson needlegrass, and green needlegrass. Grasses of secondary importance include mat muhly, prairie junegrass, and bearded wheatgrass. Cheatgrass has invaded this state. Snowberry has increased, with canopy cover up to 60% in some areas. Forbs commonly found in this plant community include Louisiana sagewort (cudweed), prairie clovers, American licorice, western yarrow, green sagewort, prairie coneflower, and scarlet globemallow. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur. When compared to the Historical Climax Plant Community, rhizomatous wheatgrasses have increased. Big bluestem and green needlegrass have decreased, often occurring only where protected from grazing by the snowberry canopy. Production of cool-season grasses has also been reduced. Cheatgrass (downy brome) and Kentucky bluegrass have invaded the state. The overstory of snowberry 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 1400 pounds per acre, but it can range from about 1000 lbs/acre in unfavorable years to about 1800 lbs/acre in above average years. The following is the growth curve expected during a normal year: Growth curve number: WY1602 Growth curve name: 15-19BL, Extra Water Sites Growth curve description: Extra Water Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 25 20 10 15 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 needleandthread, snowberry and/or cheatgrass. The watershed is usually functioning. However, it can become at risk when canopy cover of snowberry, cheatgrass, and/or bare ground increases. Transitional pathways leading to other plant communities are as follows: • Prescribed grazing will result in a plant community very similar to the Historic Climax Plant Community except that the snowberry will persist. • Frequent and Severe grazing will result in the Snowberry/Cheatgrass Plant Community.

Figure 5. Plant community growth curve (percent production by month). WY1602, 15-19BL Extra water sites - LL, Ov, CyO, SL.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	25	20	10	15	5	0	0

State 3
Snowberry/ Cheatgrass

Community 3.1
Snowberry/ Cheatgrass

Snowberry/Cheatgrass Plant Community This plant community is the result of long-term improper grazing use. Snowberry, rhizomatous wheatgrasses, cheatgrass, and Kentucky bluegrass dominate this state. Noxious weeds such as Canada thistle and leafy spurge may have invaded. American licorice, western yarrow and green sagewort have increased. Big bluestem and green needlegrass have been lost. The total annual production (air-dry weight) of this state is about 900 pounds per acre, but it can range from about 600 lbs/acre in unfavorable years to about 1400 lbs/acre in above average years. The following is the growth curve expected during an average year. Growth curve number: WY1602 Growth curve name: 15-19BL, Extra Water Sites Growth curve description: Extra Water Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 25 20 10 15 5 0 0 (Monthly percentages of total annual growth) The biotic integrity is threatened by the invasion of noxious weeds. The soil of this state is protected. The watershed is functioning but may produce excessive runoff. Transitional pathways leading to other plant communities are as follows: • Prescribed grazing over the long-term will return this state to near Historic Climax Plant Community, except that snowberry will persist.

Figure 6. Plant community growth curve (percent production by month). WY1602, 15-19BL Extra water sites - LL, Ov, CyO, SL.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	25	20	10	15	5	0	0

State 4
Rhkizomatous wheatgrass/ Green Needlegrass

Community 4.1
Rhkizomatous wheatgrass/ Green Needlegrass

Rhizomatous wheatgrass/green needlegrass Plant Community This plant community is the result of haying. Western wheatgrass and green needlegrass dominate. These grasses form a sod that is very productive and is often used for dryland hay. Big bluestem has been removed through haying. The total annual production (air-dry weight) of this state is about 2000 pounds per acre, but it can range from about 1000 lbs/acre in unfavorable years to about 3200 lbs/acre in above average years. The following is the growth curve expected during a normal year. Growth curve number: WY1602 Growth curve name: 15-19BL, Extra Water Sites Growth curve description: Extra Water Sites JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 0 0 0 5 20 25 20 10 15 5 0 0 (Monthly percentages of total annual growth) This state is productive but lacks the diversity of the HCPC. The soil of this state is protected. The watershed is functioning but may produce excessive runoff. Transitional pathways leading to other plant communities are as follows. • Prescribed grazing will return this state to near Historic Climax Plant Community. • Frequent and severe grazing will change this state to the Snowberry/Cheatgrass Plant Community.

Figure 7. Plant community growth curve (percent production by month). WY1602, 15-19BL Extra water sites - LL, Ov, CyO, SL.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	25	20	10	15	5	0	0

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				336–841	
	green needlegrass	NAVI4	*Nassella viridula*	336–841	–
2				336–841	
	western wheatgrass	PASM	*Pascopyrum smithii*	336–841	–
3				336–504	
	prairie sandreed	CALO	*Calamovilfa longifolia*	336–504	–
4				168–336	
	big bluestem	ANGE	*Andropogon gerardii*	168–336	–
5				168–336	
	blue wildrye	ELGL	*Elymus glaucus*	168–336	–
6				168–336	
	Columbia needlegrass	ACNE9	*Achnatherum nelsonii*	168–336	–
7				168–841	
	Grass, perennial	2GP	*Grass, perennial*	0–168	–
	Richardson's needlegrass	ACRI8	*Achnatherum richardsonii*	0–168	–
	bearded wheatgrass	ELCA11	*Elymus caninus*	0–168	–
	slender wheatgrass	ELTR7	*Elymus trachycaulus*	0–168	–
	needle and thread	HECO26	*Hesperostipa comata*	0–168	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	0–168	–
	switchgrass	PAVI2	*Panicum virgatum*	0–168	–
	fowl bluegrass	POPA2	*Poa palustris*	0–168	–
Forb					
8				168–504	
	Forb, perennial	2FP	*Forb, perennial*	0–168	–
	yarrow	ACHIL	*Achillea*	0–168	–
	tarragon	ARDR4	*Artemisia dracunculus*	0–168	–
	water-starwort	CALLI6	*Callitriche*	0–168	–
	prairie clover	DALEA	*Dalea*	0–168	–
	American licorice	GLLE3	*Glycyrrhiza lepidota*	0–168	–
	groundsel	TEPHR3	*Tephroseris*	0–168	–
	American vetch	VIAM	*Vicia americana*	0–168	–
	violet	VIOLA	*Viola*	0–168	–
Shrub/Vine					
9				168–336	
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	0–168	–
	hawthorn	CRATA	*Crataegus*	0–168	–
	American plum	PRAM	*Prunus americana*	0–168	–
	chokecherry	PRVIV	*Prunus virginiana var. virginiana*	0–168	–
	western snowberry	SYOC	*Symphoricarpos occidentalis*	0–168	–

Animal community

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.

Mixed Shrub/Grass: The combination of an overstory of shrubs 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.

Snowberry/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 thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

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

Animal 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 Carrying Capacity*
(Lbs/acre) (AUM/ac)
Historic Climax Plant Community 2000-4000 .7
Mixed Shrub/Grass 1000-1800 .6
Snowberry/Cheatgrass 600-1400 .3
Rhizomatous wheatgrass/Green needlegrass 1000-3200 .6
* - 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.

Hydrological functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B and C. Infiltration ranges from moderate to rapid. Runoff potential for this site varies from moderate to high depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-

grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

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

Recreational uses

This site provides hunting opportunities for upland game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood products

No appreciable wood products are present on the site.

Other products

none noted

Inventory data references

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.

Contributors

G. Mitchell

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	04/01/2005
Approved by	E. Bainter
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present

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2. **Presence of water flow patterns:** Barely observable

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3. **Number and height of erosional pedestals or terracettes:** Essentially non-existent

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is 10-20% occurring in small areas throughout site

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5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None

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7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and litter is at 80% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Use Soil Series description for depth and color of A-horizon

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Moderately Slow to Slow.

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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.

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

Other:

Additional: Mid stature Cool Season Grasses > Mid stature Warm Season Grasses > Forbs > Shrubs > Short stature Grasses/Grasslikes

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very Low

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14. **Average percent litter cover (%) and depth (in):** Average litter cover is 35-45% with depths of 0.25 to 1.0 inches

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 3000 lbs/ac

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Cheatgrass/other annuals, American licorice, Western yarrow, Green sagewort, Snowberry, Kentucky bluegrass, and Species found on Noxious Weed List

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17. **Perennial plant reproductive capability:** All species are capable of reproducing

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