

Ecological Site Description—Rangeland

Sandy–Steep, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
 MLRA: 60B – Pierre Shale Plains, East
 R058AE006MT, R060BE584MT

Site Name: Sandy–Steep (SyStp), 10–14 inches Mean Annual Precipitation (MAP) (FORMERLY THIN SANDY)

Site Number: R058AE006MT, R060BE584MT

Major Land Resource Areas: 58A – Northern Rolling High Plains, North Part
 60B – Pierre Shale Plains, North Part

Rangeland Resource Units: 58AE – Sedimentary Plains, East
 60BE – Pierre Shale Plains, East

1. Physiographic Features: This ecological site occurs on moderately steep to steep sedimentary plains, and hills. Slopes are mainly between 15 and 45%. This site occurs on all exposures and aspect can be significant. Variations in plant community composition and production can result due to aspect. Runoff and potential for water erosion can be significant.

Elevation (feet): 1,900–3,500
Landform: hill, plain, ridge
Slope (percent): 15–45
Depth to Water Table (inches): greater than 60
Flooding: none
Ponding: none
Runoff Class: low to high
Aspect: all aspects

2. Climatic Features: MLRAs 58A and 60B are considered to have a continental climate characterized by cold winters, hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are typical. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains and the winds move freely across the plains and account for rapid changes in temperature. Seasonal precipitation is often limiting for plant growth. Annual fluctuations in species composition and total production are typical depending on the amount and timing of rainfall. See Climatic Data Sheet MLRA 58A, east and 60B, for more details (Section II of the NRCS Field Office Technical Guide). For local climate station information, refer to <http://www.wcc.nrcs.usda.gov>.

Frost-free period (32° F)-days: 105–145
Freeze-free period (28° F)-days: 125–170
Mean annual precipitation (inches): 10–14

3. Influencing Water Features: None

4. Associated sites: Mainly Sandy and Shallow. Occasionally, Sands, Gravel, Silty, and Silty-Steep.

5. Similar sites: Sands, Sandy, Shallow

The Sands site differs mainly in being on slopes less than 15%.

The Sandy site is also mainly on slopes less than 15%.

The Shallow site is mainly 20 inches or less to hard rock or other root limiting material.

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6. Soils: These soils are moderately deep to very deep sandy soils on moderately steep, steep or hilly landscapes. Effective rooting depth is greater than 20 inches. The major limitation to plant growth is reduced effective moisture due to the potential for runoff.

Parent material (kind): alluvium, residuum, colluvium

Parent material (origin): sandstone

Surface textures: sand, loamy sand, sandy loam, fine sandy loam

Depth (inches): greater than 20

Soil surface permeability (inches per hour): moderate (0.6–2.0) to moderately rapid (2.0–6.0)

Available Water Holding Capacity to 40" inches): 4–6

Drainage Class: well to somewhat excessively

Salinity/Electrical Conductivity (mmhos/cm): non-saline (0–2)

Sodium Absorption Ratio (SAR): 0–4

Reaction (pH) (1:1 water): neutral to moderately alkaline (6.6–8.4)

6a. Representative Soils: Listed below are soils and map units which characterize this site in various counties. (Reference MT-165, Soil Interpretive Rating Report).

COUNTIES	TYPICAL SOILS	MAP UNIT
Big Horn	Busby sandy loam	TCb
Carter	Twilight fine sandy loam	55E, 99F
Custer	Twilight fine sandy loam	271E, 665F, 916E, 921F
Fallon	Twilight fine sandy loam	55E, 170D
Garfield	Twilight fine sandy loam	314E, 352F, 363F
McCone	Twilight fine sandy loam	34
Prairie	Busby fine sandy loam	8, 18, 135
Prairie	Twilight fine sandy loam	15
Rosebud	Twilight fine sandy loam	49, 178
Treasure	Flasher fine sandy loam	Fh
Treasure	Tulloch fine sandy loam	Tp, Bf

7. Plant Community and Species Composition: The physical aspect of this site is that of a steeply sloping grassland dominated by warm and cool-season grasses, with scattered forb and shrub cover. Approximately 70–75% of the annual production is from grasses and sedges, 5–15% from forbs, and 5–10% is from shrubs and half-shrubs. Canopy cover of shrubs is 0–5%.

TABLE 7a.—Major Plant Species Composition, lists plant species composition and production by dry weight for the Historic Climax (HCPC) or Potential Plant Community (PPC) for this site. The Historic Climax or Potential Plant community has been determined by the study of rangeland relict areas, exclosures, or areas protected from excessive grazing. Total annual production has been derived from several data sources, and has been adjusted to represent a typical annual moisture cycle for the site. Reference for plant species names and symbols: USDA–NRCS PLANTS Database at <http://plants.usda.gov>.

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7a. Major Plant Species Composition – Historic Climax/Potential Plant Community

Common Name	Plant Symbol	Plant Group	Percent Comp.	Group Max. %	Mean Annual Precipitation (MAP) (inches)				
					10	11	12	13	14
					(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)
Grasses and Sedges 70–75%					712	806	900	1125	1350
Prairie sandreed	CALO	5	20-30		190-285	215-322	240-360	300-450	360-540
Little bluestem	ANSC10	1	20-30		190-285	215-322	240-360	300-450	360-540
Needleandthread	HECOC8	10	5-15		48-142	54-161	60-180	75-225	90-270
Bluebunch wheatgrass*	PSSP6	2	15-50		142-475	161-538	180-600	225-750	270-900
Big bluestem	ANGE	1	0-15		0-142	0-161	0-180	0-225	0-270
Western or	PASM	14	5-10		48-95	54-108	60-120	75-150	90-180
Plains muhly	MUCU3	3	1-5		10-48	11-54	12-60	15-75	18-90
Sun sedge	CAHE	3	1-5		10-48	11-54	12-60	15-75	18-90
Threadleaf sedge	CAFI	12	1-5		10-48	11-54	12-60	15-75	18-90
Indian ricegrass	ACHY	2	0-5		0-48	0-54	0-60	0-75	0-90
Sand dropseed	SPCR	9	1-5}	10	10-95 No more than 48 for any one	11-108 No more than 54 for any one	12-120 No more than 60 for any one	15-150 No more than 75 for any one	18-180 No more than 90 for any one
Prairie junegrass	KOMA	12	1-5}						
Sandberg bluegrass	POSE	12	1-5}						
Blue grama	BOGR2	15	1-5}						
Green needlegrass	NAVI4	2	0-5}						
Needleleaf sedge	CADU6	16	0-5}						
Other native grasses	2GP		0-5}						
Red threeawn	ARPUL	11	0-T	T	T	T	T	T	T
Forbs 5–15%					142	161	180	225	270
Black samspon	ECPA	21	1-5}	15	10-142 No more than 48 for any one	11-161 No more than 54 for any one	12-180 No more than 60 for any one	15-225 No more than 75 for any one	18-270 No more than 90 for any one
Scurfpea spp.	PSORA	23	1-5}						
Purple prairieclover	DAPU5	21	1-5}						
White prairieclover	DACA7	21	1-5}						
Hairy goldenaster	HEVI4	23	1-5}						
Green sagewort	ARDR4	19	0-5}						
Stoneseed	LIRU	24	0-5}						
Dotted gayfeather	LIPU	21	1-5}						
Missouri goldenrod	SOMI2	19	1-5}						
Prairie coneflower	RACO3	23	1-5}						
Wild onion	ALLIU	32	0-5}						
Aster spp.	ASTER	19	1-5}						
White milkwort	POAL	23	0-5}						
Spiderwort	TRBR	26	0-5}						
Western wallflower	ERAS	24	0-5}						
Other native forbs	2FP		0-5}						
Death camas **	ZIGAD	32	0-T	T	T	T	T	T	T
White point loco **	OXSE	24	0-T						
Shrubs and Half-shrubs 5–10%					95	108	120	150	180
Winterfat	KRLA2	35	1-5}	10	10-95 No more than 48 for any one	11-108 No more than 54 for any one	12-120 No more than 60 for any one	15-150 No more than 75 for any one	18-180 No more than 90 for any one
Prairie rose	ROAR3	38	0-5}						
Silver sagebrush	ARCA13	36	0-5}						
Skunkbush sumac	RHTR	33	0-5}						
Wyoming big sagebrush	ARTRW8	37	0-5}						
Fringed sagewort	ARFR4	38	1-5}						
Yucca	YUGL	37	0-5}						
Other native shrubs	2SB		1-5}						
Plains pricklypear	OPPO	38	0-T	T	T	T	T	T	
Broom snakeweed	GUSA2	37	0-T						
Brittle cactus	OPFR	38	0-T						
Total Annual Production (lbs./acre)			100%		950	1075	1200	1500	1800

* The percentage of this species tends to increase in the western part of this range resource unit.

** These species are poisonous to some grazing animals during at least some portion of their life cycle.

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7b. Plant Group Descriptions: Plant functional groups are based on: season of growth, growth form, stature, type of root system, and ecological response to disturbance. Refer to Field Office Technical Guide (FOTG) Section II for a complete description of plant groups.

8. Total Annual Production: Total annual production is a measurement of the total aboveground production (dry weight) of all major plant species that occur on the site during a single growth year, regardless of preference to grazing animals. This information is listed at the bottom of TABLE 7a.–Major Plant Species Composition. Average production values are listed for each incremental inch of precipitation for the site.

9. Cover and structure: The following table shows the approximate amounts of basal cover, canopy cover, and plant heights for this site in the Historic Climax or Potential Plant Community.

COVER TYPE	BASAL COVER (%)	CANOPY COVER (%)	AVERAGE HEIGHT (inches)
Cryptogams	0 – T	0 – T	0.25
Grasses/ sedges	3 – 7	55 – 70	24
Forbs	1 – 2	5 – 10	18
Shrubs	T – 1	T – 5	24
Litter	15 – 25		
Coarse fragments	0 – 4		
Bare ground	60 – 80		

10. Ecological Dynamics: This site developed under Northern Great Plains climatic conditions, which included the natural influence of large herbivores and occasional fire. The plant community upon which interpretations are primarily based is the Historic Climax Plant Community (HCPC) or Potential Plant Community. This plant community is described as a reference to understand the original potential of this site, and is not always considered to be the management goal for every acre of rangeland. The following descriptions should enable the landowner or manager to better understand which plant communities occupy their land, and assist with setting goals for vegetation management. It can also be useful to understand the environmental and economic values of each plant community.

This site is considered moderately resilient to disturbance as it has only moderate soil limitations (slope) for plant growth. Changes may occur to the Historic Climax Plant Community due to management actions and/or climatic conditions. Under continued adverse impacts, a moderate to extreme decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments, this site can more readily return to the Historic Climax Plant Community (HCPC).

Continual adverse impacts to the site over a period of years results in a departure from the HCPC, with a decrease of the taller, more palatable species such as **prairie sandreed, little bluestem, and bluebunch wheatgrass**. These plants will be replaced by **needleandthread, sand dropseed, threadleaf sedge, prairie junegrass, non-palatable forbs, and shrubs such as yucca**.

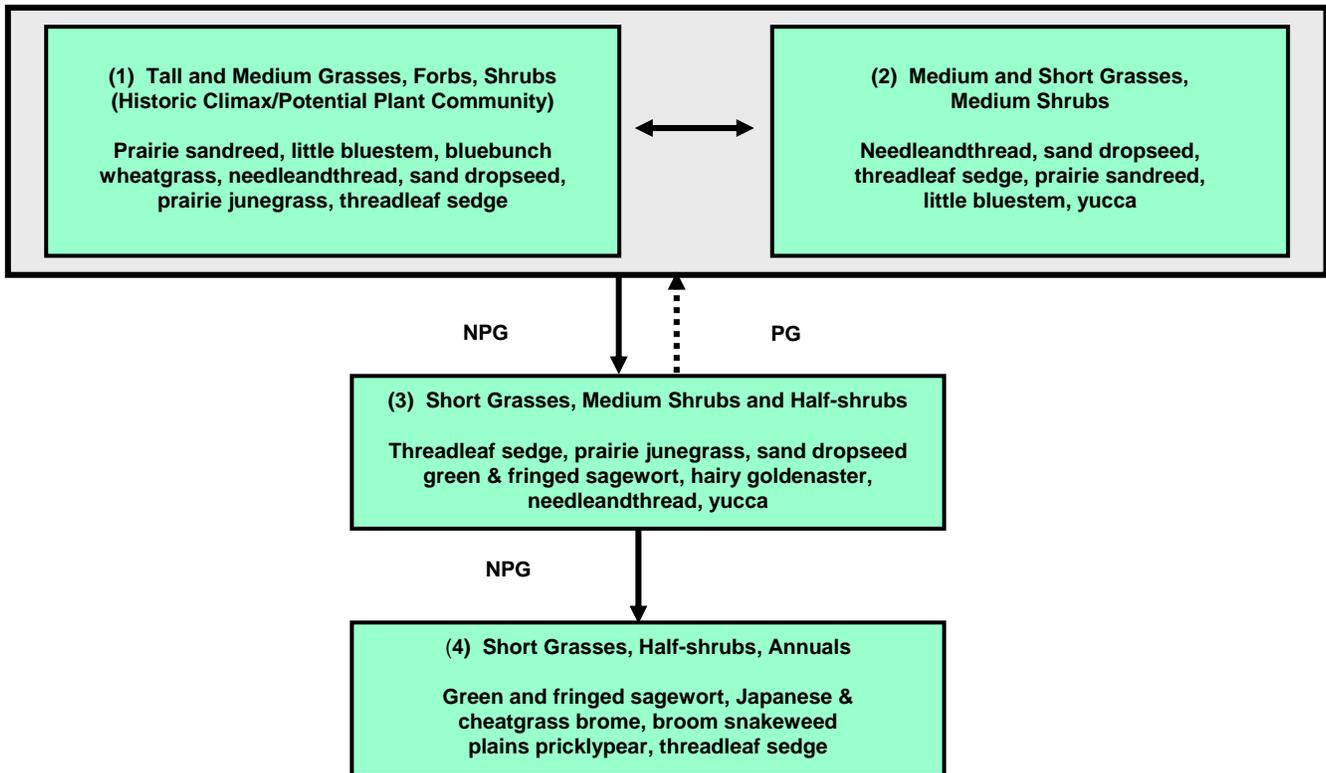
Plants that are not a part of the climax community that are most likely to invade are **cheatgrass, Japanese brome, annual and biennial forbs, and broom snakeweed**.

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Plant Communities and Transitional Pathways (diagram)



Smaller boxes within a larger box indicate that these communities will normally shift among themselves with slight variations in precipitation and other disturbances. Moving outside the larger box indicates the community has crossed a threshold (heavier line) and will require intensive treatment to return to Community 1 or 2. Dotted lines indicate a reduced probability for success.

NOTE: Not all species present in the community are listed in this table. Species listed are representative of the plant functional groups that occur in the community.

PG = Prescribed Grazing: Use of a planned grazing strategy to balance animal forage demand with available forage resources. Timing, duration, and frequency of grazing are controlled and some type of grazing rotation is applied to allow for plant recovery following grazing.

NPG = Non-Prescribed Grazing: Grazing which has taken place that does not control the factors as listed above, or animal forage demand is higher than the available forage supply.

10a. Major Plant Community Types: Following are descriptions of several plant communities that may occupy this site.

Plant Community 1: Tall and Medium Grasses/ Forbs/ Shrubs: This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC) or Potential Plant Community (PPC) for this site. This plant community is a mixture of cool and warm season grasses, including **prairie sandreed, little bluestem, bluebunch wheatgrass, and needleandthread**. There are also several short grasses and sedges, forbs and shrubs in small percentages, including **sand dropseed, prairie junegrass, threadleaf sedge, winterfat, prairie rose, and skunkbush sumac**.

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This plant community is well adapted to the Northern Great Plains climatic conditions. The diversity in plant species and the presence of tall, deep-rooted perennial grasses allows for high drought tolerance. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Plants on this site have strong, healthy root systems that allow production to increase significantly with favorable precipitation. Abundant plant litter is available for soil building and moisture retention. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. Run-off from adjacent sites and moderate or high available water capacity provides a favorable soil-water-plant relationship. This plant community provides for soil stability and a functioning hydrologic cycle.

Plant Community 2: Medium and Short Grasses/ Medium Shrubs: Slight variations can result in a community similar to the HCPC/PPC but with higher proportions of medium and short grasses, such as **needleandthread, sand dropseed, and threadleaf sedge**. There may also be some increase in the proportion of forbs and shrubs, including **yucca**.

Grass biomass production and litter become reduced on the site as the taller grasses disappear, increasing evapotranspiration and reducing moisture retention. Additional open space in the community can result in undesirable invader species. This plant community provides for moderate soil stability.

Plant Community 3: Short Grasses/ Medium Shrubs/ Half-shrubs: With continued heavy disturbance on Community 2, the plant community tends to become dominated by medium and short grasses. The taller grasses and palatable forbs are reduced to a minor component of the plant community. They are replaced by **threadleaf sedge, prairie junegrass, sand dropseed, and needleandthread**. The more desirable forbs are replaced by species such as **hairy goldenaster, and green sagewort**. **Fringed sagewort, and yucca** become a more significant component of the plant community.

This plant community is less productive than Plant Community 1 or 2. The lack of litter and short plant heights result in higher soil temperatures, poor water infiltration rates, and high evapotranspiration. This community has lost many of the attributes of a healthy rangeland, including good infiltration, minimal erosion and runoff, nutrient cycling and energy flow.

This community will respond positively to improved grazing management, but significant economic inputs and time would be required to move this plant community toward a higher successional stage and a more productive plant community.

Plant Community 4: Short Grasses/ Half-shrubs/ Annuals: Continued deterioration can result in a community having smaller proportions of plants that occur in community 2 or 3. Species such as **threadleaf sedge, sand dropseed, and needleandthread** are still present, but are being replaced by **green sagewort and hairy goldenaster**. Annual grasses such as **Japanese and cheatgrass brome, cactus, and broom snakeweed** also become prominent components.

This plant community is significantly less productive than the HCPC and has lost many of the attributes of a healthy rangeland. The loss of deep perennial root systems reduces total available moisture for plant growth. Reduction of plant litter will result in higher surface soil temperatures and increased evaporation losses. Annual species are often aggressive and competitive with seedlings of perennial plants.

10b. Plant Communities and Transitional Pathways (State and Transition Model): Transitions in plant community composition occur along a gradient that is not linear. Many processes are involved in the changes from one community to another. Changes in climate, elevation, soils, landform, fire patterns and frequency, and grazing all play a role in determining which of the plant communities will be expressed. The following model outlines some of the various plant communities that may occur on this site and provides a diagram of the relationship between plant community and type of use or disturbance.

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11. Plant Growth Curves: Growth of native cool-season plants begins in April and continues to the end of June. Native warm-season plants begin growth about mid May and continue to about the end of August. Green up of cool-season plants can occur in September through October when adequate soil moisture is present. The following tables show the approximate percentage of total growth by month that is expected to occur in various plant communities on this site for a "typical" moisture year.

Growth Curve Number: MT0810

Growth Curve Description: Includes all upland sites in eastern sedimentary plains having deep soils and mainly warm season plants.

Totals for Each Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	5	15	40	25	10	5	0	0	0

Cumulative Totals by Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	5	20	60	85	95	100	0	0	0

Growth Curve Number: MT0811

Growth Curve Description: Includes upland sites in the eastern sedimentary plains, 10–14" p.z., with soil limitations, dominated by cool season grasses.

Totals for Each Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	5	25	35	30	5	0	0	0	0	0

Cumulative Totals by Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	5	30	65	95	100	0	0	0	0	0

12. Livestock Grazing Interpretations: Managed livestock grazing is suitable on this site as it has the potential to produce a moderate amount of high quality forage. Forage production is somewhat limited by steep slopes and the potential for runoff, reducing the effectiveness of the precipitation received for plant growth. The steeper slopes may also limit livestock travel and result in poor grazing distribution, especially in areas away from water. Management objectives should include maintenance or improvement of the plant community. Shorter grazing periods and adequate re-growth after grazing are recommended for plant maintenance and recovery. Heavy stocking and season long use of this site can be detrimental and will alter the plant community composition and production over time.

Whenever Plant Community 2 (medium and short grasses) occurs, grazing management strategies need to be implemented to avoid further deterioration. This community is still stable, productive, and healthy provided it receives proper management. This community will respond fairly quickly to improved grazing management including increased growing season rest of key forage plants. Grazing management alone can usually move this community back to one more similar to potential if a good seed source of the taller grasses still exists.

Plant Communities 3 and 4 have substantially reduced forage production, and a high percentage of aggressive, non-palatable species. Once these plant communities become established, it will be much more difficult to restore the site to a community that resembles the potential with grazing management alone. Additional growing season rest is often necessary for re-establishment of the desired species and to restore the stability and health of the site. Brush management and seeding may be necessary to restore desirable native perennial species.

The potential for seeding or using mechanical treatment to improve site health is limited due to steep slopes.

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12a. Calculating Safe Stocking Rates: Proper stocking rates should be incorporated into a grazing management strategy that protects the resource, maintains or improves rangeland health, and is consistent with management objectives. Safe stocking rates will be based on useable forage production, and should consider ecological condition and trend of the site, and past grazing use history.

Calculations used to determine an safe stocking rate are based on the amount of useable forage available, taking into account the harvest efficiency of the animal and the grazing strategy to be implemented. Average annual production must be measured or estimated to properly assess useable forage production and stocking rates.

12b. Guide to Safe Stocking Rates: The following charts provide a guide for determining an safe stocking rate. Animal Unit Month (AUM) figures are based on averages of forage production from data collected for this site over several years. The characteristic plant communities and production values listed may not accurately reflect the productivity of a specific piece of land, hence this table should not be used without on-site information as to current forage productivity of the site. Adjustments to stocking rates for each range unit must be made based on topography, slope, distance to livestock water, and other factors, which effect livestock grazing behavior.

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12c. Stocking Rate Guide:

Major Plant Community Dominant Plant Species	MAP	Total Production (pounds/ac)	Cattle			Sheep		
			Forage Production	AUM/ac	Ac/AUM	Forage Production	AUM/ac	Ac/AUM
1. Tall and Medium Grasses, Forbs, Shrubs (HCPC/PPC) <i>Prairie sandreed, little bluestem, sand dropseed, bluebunch wheatgrass, needleandthread, prairie junegrass, threadleaf sedge</i> (S.I. >75%)	13–14"	1500–1800	1250–1500	.40–.45	2.2–2.5	1350–1600	.43–.50	2.0–2.3
	10–12"	950–1200	800–1000	.25–.32	3.1–4.0	850–1050	.27–.33	3.0–3.7
2. Medium & Short Grasses, Medium Shrubs <i>Needleandthread, sand dropseed, threadleaf sedge, prairie sandreed, little bluestem, yucca</i> (S.I. 50–75%)	13–14"	1250–1500	900–1300	.28–.40	2.5–3.6	1000–1350	.32–.43	2.3–3.1
	10–12"	800–1000	600–850	.19–.27	3.7–5.3	650–900	.20–.28	3.6–5.0
3. Short Grasses, Medium Shrubs and Half-shrubs <i>Threadleaf sedge, prairie junegrass, sand dropseed green & fringed sagewort, hairy goldenaster, needleandthread, yucca</i> (S.I. 30–50%)	10–14"	700–1300	450–1000	.14–.32	3.1–7.1	500–1050	.16–.33	3.0–6.25
4. Short Grasses, Half-shrubs, Annuals <i>Green and fringed sagewort, Japanese & cheatgrass brome, broom snakeweed, plains pricklypear, threadleaf sedge</i> (S.I. < 30%)	10–14"	450–900	200–550	.04–.12	8.3–25	250–600	.06–.13	7.7–16.7

Stocking rates are calculated from average forage production values using a 25% Harvest Efficiency factor for preferred and desirable plants, and 10% Harvest Efficiency for less desirable species. AUM calculations are based on 790 pounds per animal unit month (AUM) for a 1,000-pound cow with calf up to 4 months. No adjustments have been made for site grazability factors, such as steep slopes, site inaccessibility, or distance to drinking water.

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12d. Plant Forage Preferences for Cattle and Sheep

Legend: P=Preferred D=Desirable U=Undesirable E=Emergency
 N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March; Spring (SP) = April, May, June;
 Summer (SU) = July, Aug., Sept.; Fall (F) = Oct., Nov., Dec.

PLANT NAME	Cattle				Sheep			
	W	SP	SU	F	W	SP	SU	F
Prairie sandreed	D	D	D	D	D	D	D	D
Little bluestem	P	P	P	P	U	D	D	U
Bluebunch wheatgrass	P	D	P	P	D	D	D	D
Indian ricegrass	P	P	P	P	P	P	P	P
Big bluestem	P	P	P	P	P	P	P	P
Western wheatgrass	P	D	D	P	D	D	D	D
Thickspike wheatgrass	P	P	P	P	P	P	P	P
Needleandthread ^{1/}	D	D	D	D,T	D	D	D	D
Green needlegrass	P	P	P	P	P	P	P	P
Sideoats grama	P	P	P	P	D	D	P	D
Sand dropseed	D	D	D	D	D	D	D	D
Sandberg bluegrass	D	D	D	D	D	D	D	D
Sun sedge	D	P	D	P	D	D	D	D
Threadleaf and Needleleaf sedge	D	P	P	D	D	P	P	D
Plains muhly	D	D	D	D	D	D	D	D
Prairie junegrass	D	D	D	D	D	P	D	D
Blue grama	D	D	D	D	D	P	P	D
Plains reedgrass	D	D	D	D	U	U	U	U
Buffalograss	D	D	D	D	D	D	D	D
Red threeawn	N	U	N	N	N	U	N	N
Tumblegrass	N	U	N	N	N	U	N	N
Cheatgrass ^{2/}	U	D	N	N	U	P	U	U
Black samson	N	D	D	D	D	P	P	D
Prairieclover spp.	N	D	D	D	D	D	D	D
Dotted gayfeather	N	P	P	P	D	P	D	D
Milkvetch spp. ^{3/}	N	D,T	D,T	D,T	D,T	P,T	D,T	D,T
American vetch	N	P	P	D	N	P	P	D
Prairie coneflower	N	D	D	D	D	D	D	D
Wild onion	N	P	P	N	N	P	P	N
Hood's phlox	N	N	N	N	U	U	U	U
Pussytoes spp.	N	N	N	N	U	U	U	U
Wild parsley	N	D	D	U	N	D	D	U
Green sagewort	N	N	N	N	N	N	N	N
Scarlet globemallow	N	D	D	D	N	D	D	D
Two-grooved poisonvetch	N	T	T	T	N	T	T	T
White point loco	N	T	T	T	T,N	T,N	T,N	T,N
Low larkspur	N	N,T	N,T	N	N	D,T	D,T	N
Death camas	N	T	T	N	N	T	T	N
Winterfat	P	P	P	P	P	D	D	P
Skunkbush sumac	N	N	N	N	N	N	N	N
Prairie rose	N	N	N	N	D	D	D	D
Silver sagebrush	D	D	D	D	D	D	D	D
Green and rubber rabbitbrush	U	U	U	U	U	U	U	U
Wyoming big sagebrush	N	N	N	N	P	D	D	P
Fringed sagewort	N	N	N	N	U	U	U	U
Yucca	N	N	N	N	U	D	D	U
Broom snakeweed ^{4/}	N	N	N	U	U	U	U	U
Plains pricklypear ^{5/}	N	N	N	N	U	U	U	U

^{1/} The awns and sharp seeds of needleandthread can harm livestock when dry.

^{2/} Not a native plant, but a common invader.

^{3/} Some species of milkvetch are poisonous.

^{4/} Broom snakeweed can be poisonous, but this is not usually a problem in Montana because plants die back in winter and do not have green leaves in early spring.

^{5/} The spines can be injurious to livestock.

Ecological Site Description—Rangeland

Sandy–Steep, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE006MT, R060BE584MT

13. Wildlife Interpretations: The following is a description of habitat values for the different plant communities that may occupy the site:

Plant Community 1: Tall Grasses/Forbs/Shrubs (HCPC or PPC): The predominance of grasses and diversity of forbs, shrubs and half-shrubs in this community favors grazers and mixed feeders such as bison, pronghorn and elk. Large animal nutrition levels are relatively high year-long with the diversity of grasses, forbs and shrubs. South-facing exposures may provide winter habitat for mule deer. The complex plant structural diversity provides habitat for a wide array of small mammals (both seed-eaters, i.e., pocket mouse, and herbivores, i.e. prairie vole) and neotropical migratory birds. Diverse prey populations are available for raptors such as ferruginous hawks and prairie falcons. The mix of grass stature and life forms, along with scattered shrubs and a variety of forbs, provides habitat for many bird species including the sharp-tailed grouse, loggerhead shrike, vesper and lark sparrow, and western meadowlark.

Plant Community 2: Medium and Short Grasses/ Medium Shrubs: The partial loss of tall, palatable grasses, forbs and shrubs makes this community somewhat less attractive for the variety of wildlife species using the HCPC or PPC. A decrease in litter and residual plant cover reduces habitat value for ground-nesting birds and herbivorous small mammals like voles. However, an increase in the proportion of forbs and shrubs still provides food and cover for a variety of breeding birds such as vesper and lark sparrows, loggerhead shrikes and upland sandpipers. Small mammal species composition may shift toward higher proportions of seed-eaters, like deer mice, as litter cover is reduced.

Plant Community 3: Short Grasses/ Medium Shrubs and Half-shrubs: Wildlife food and cover value is considerably reduced at this successional stage following loss of many desirable plant species and structural habitat diversity. Big game animal cover and browse is largely missing. Breeding bird habitat suffers from a lack of litter and residual plant material as well as structural diversity in all plant canopy layers. Small mammal populations are dominated by the adaptable, seed-eating deer mouse.

Plant Community 4: Short Grasses/ Half-shrubs/ Annuals: This community has very low habitat value for most wildlife species because of the lack of plant structural diversity and ground cover.

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13a. Plant Preferences for Antelope and Deer:

Legend: P=Preferred D=Desirable U=Undesirable E=Emergency
N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March; Spring (SP) = April, May, June;
Summer (SU) = July, Aug., Sept.; Fall (F) = Oct., Nov., Dec.

PLANT NAME	Antelope				Deer			
	W	SP	SU	F	W	SP	SU	F
Perennial grasses	P	P	P	P	D	P,D	D	D
Red threeawn	N	N	N	N	N	N	N	N
Annual grasses	N	P,D	N	D	N	P,D	N	D
Sedges	D	P	P	P	D	P	P	P
Black samson	P	P	P	P	D	D	D	D
Prairieclover spp.	P	P	P	P	P	P	P	P
Dotted gayfeather	D	P	D	D	D	P	P	P
Milkvetch spp.	D	P	P	D	D	D	D	D
Scurfpea spp.	N	D	D	D	D	D	D	D
Hairy goldenaster	E	E	E	E	E	E	E	E
Goldenrod spp.	D	P	P	P	D	D	D	D
American licorice	P	P	D	D	D	P	D	D
Prairie coneflower	D	P	P	D	D	P	D	D
American vetch	P	P	P	P	D	P	P	P
Hood's phlox	U	U	U	U	U	U	U	U
Wild parsley	U	D	U	U	U	D	U	U
Green sagewort	N	N	N	N	N	N	N	N
Scarlet globemallow	D	D	D	D	D	D	D	D
Twogrooved poinsonvetch	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
White point loco	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
Death camas	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
Larkspur spp.	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
Winterfat	P	P	P	P	P	P	P	P
Prairie rose	U	U	U	U	E	D	E	E
Silver sagebrush	D	D	P	D	P	P	D	P
Wyoming big sagebrush	P	P	P	P	P	P	D	D
Rabbitbrush spp.	D	D	D	D	D	D	D	D
Fringed sagewort	D	U	U	D	D	U	U	D
Green sagewort	N	N	N	N	N	N	N	N
Plains pricklypear	N	N	N	N	N	N	N	N
Broom snakeweed	N	N	D	N	D	D	P	P

14. Hydrology Data: The soils associated with this ecological site are generally in Hydrologic Soil Group B. The infiltration rates for these soils will normally be moderate, to moderately rapid. The runoff potential for this site is low high depending on slope and ground cover/health. Runoff curve numbers generally range from 65 to 83.

Good hydrologic conditions exist on rangelands if plant cover (grass, litter, and brush canopy) is greater than 70%. Fair conditions exist when cover is between 30 and 70%, and poor conditions exist when cover is less than 30%. Sites in high similarity to HCPC (Plant Communities 1 and 2) generally have enough plant cover and litter to optimize infiltration, minimize runoff and erosion, and have a good hydrologic condition. The deep root systems of the potential vegetation help maintain or increase infiltration rates and reduce runoff.

Sites in low similarity (Plant Communities 3 and 4) are generally considered to be in poor hydrologic condition as the majority of plant cover is from shallow-rooted species such as threadleaf sedge and annual grasses.

Ecological Site Description—Rangeland

Sandy–Steep, 10–14" MAP

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Erosion is minor for sites in high similarity. Rills and gullies should not be present. Water flow patterns, if present, will be barely observable. Plant pedestals are essentially non-existent. Plant litter remains in place and is not moved by erosion. Soil surfaces should not be compacted or crusted. Plant cover and litter helps retain soil moisture for use by the plants. Maintaining a healthy stand of perennial vegetation will optimize the amount of precipitation that is received. (Reference: Engineering Field Manual, Chapter 2 and Montana Supplement 4).

15. Recreation and Natural Beauty: This site provides recreational opportunities for big game and upland bird hunting, and hiking. The forbs have flowers that appeal to photographers. This site provides valuable open space and visual aesthetics.

16. Wood Products: None

17. Site Documentation:

Authors: Original: REL, AJN, 1983 Revised: JVF, REL, RSN, MJR, SKW, SVF, POH, 2003

Supporting Data for Site Development:

NRCS–Production & Composition Record for Native Grazing Lands (Range-417): 4
BLM–Soil & Vegetation Inventory Method (SVIM) Data: 5
NRCS–Range Condition Record (ECS-2): 10
NRCS–Range/Soil Correlation Observations & Soil 232 notes: 9

Field Offices where this site occurs within the state:

Baker	Ekalaka	Hysham	Sidney
Billings	Forsyth	Jordan	Terry
Broadus	Glendive	Miles City	Wibaux
Circle	Hardin	Roundup	

Site Approval: This site has been reviewed and approved for use:

Rhonda Sue Noggles
State Rangeland Management Specialist

06/30/03
Date

Ecological Site Description—Rangeland

Sandy-Steep, 10–14" MAP

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Sandy-Steep 10–14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Dawson County



Sandy-Steep 10–14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Carter County

Ecological Site Description—Rangeland

Sandy-Steep, 10–14" MAP

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**Sandy-Steep 10–14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC**



**Sandy-Steep 10–14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC**

Ecological Site Description—Rangeland

Sandy-Steep, 10–14" MAP

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**Sandy-Steep 10–14"
Sedimentary Plains, east
Plant Community 2**



**Sandy-Steep 10–14"
Sedimentary Plains, east
Plant Community 2 to 3**



**Sandy-Steep 10–14"
Sedimentary Plains, east
Plant Community 3**