United States Department of Agriculture
Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

Site Name: Loess Breaks
(formerly Thin Loess in NE)

Site ID: R072XA016KS

Major Land Resource Area: 72 – Central High Tableland
Due to the climatic gradient (effective precipitation, growing season, etc.) within MLRA - 72, the plant communities will differ between the northern and southern portions of this major land resource area. A transition zone within these two areas generally lies on either side of the Smokey Hill River drainage. Judgment will need to be used when determining which Ecological Site Description best fits field conditions within this transition zone.

Physiographic Features

This site occurs on steep to very steep hillslopes and canyon walls that have been dissected by geologic erosion creating narrow ridges or divides that break off steeply to narrow drainage ways below. The hillslopes of this site are characteristically broken with a series of slope slips, often referred to as “catsteps”. The depth and height of these catsteps intensifies with increasing slope. Vertical faces of loess, areas of broken sod and deep gullies are common on this site. Vehicular traffic is very limited on this site. This site produces runoff to areas lower on the landscape.

Landform: hill, canyon

Aspect: N/A

	Minimum	Maximum
Elevation (feet):	2500	5000
Slope (percent):	20	>60
Water Table Depth (inches):	60	>80
Flooding:		
Frequency:	none	none
Duration:	none	none
Ponding:		
Depth (inches):	0	0
Frequency:	none	none
Duration:	none	none
Runoff Class:	high	high

Climatic Features

Annual precipitation ranges from 16 to 20 inches per year. Hourly winds are estimated to average about 10 miles per hour annually, ranging from 15-30 miles per hour during the spring to 5-15 miles per hour during late summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

	Minimum	Maximum
Frost-free period (days):	141	155
Freeze-free period (days):	161	174
Mean Annual Precipitation (inches):	16	20

Average Monthly Precipitation (inches) and Temperature (ºF):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.32	0.41	9.7	43.0
February	0.39	0.51	14.8	48.3
March	0.85	1.13	22.7	55.5
April	1.50	1.98	33.5	65.7
May	2.60	3.31	44.9	75.2
June	2.56	3.53	54.9	85.4
July	2.55	3.04	60.7	92.1
August	2.16	2.30	58.5	90.2
September	1.23	1.54	47.0	81.7
October	1.04	1.09	34.0	70.4
November	0.50	0.63	21.1	54.3
December	0.41	0.42	12.8	44.9

Climate Stations		Period	
Station ID	**Location or Name**	**From**	**To**
CO1121	Burlington, CO	1918	2001
CO9243	Wray, CO	1918	2001
KS3153	Goodland WSO, KS	1948	2001
NE4900	Lodgepole, NE	1948	2001
NE6065	North Platte WSO AP, NE	1948	2001

For local climate stations that may be more representative, refer to http://www.hprcc.unl.edu or http://www.wcc.nrcs.usda.gov.

Influencing Water Features

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

Stream Type: None

Representative Soil Features

This site is dominated by steep to very steep slopes of loess breaks and includes narrow ridges and divides separating these slope faces. The slope of the soils in this site range from 20 percent to near vertical, with slopes dominantly exceeding 30 percent. Those slopes under 30 percent are primarily on the included narrow ridges and divides.

The soils on this site are very deep and have thin, normally calcareous, silty surface layers. Organic matter content is generally low to moderately low in the surface layer. The silty substratum is calcareous with relatively low inherent fertility, and generally has a CACO3 equivalent of less than 15 percent. Included within this site are surfaces that have broken sod and are generally unstabilized on the steepest slopes and within gullies.

Water flow patterns should be evident on most of this site due to slope and vegetation morphology. They may be broken and irregular in appearance or connected with some minor erosion. This site should exhibit signs of rills on steeper slopes. Pedestaled plants would be common, especially in water flow patterns. Sub-surface soil layers are non-restrictive to water movement and root penetration. Included within this site are surfaces that have broken sod and are generally unstabilized on the steepest slopes and within gullies. The soils on this site are highly susceptible to both wind and water erosion when void of vegetative protection.

Major soil series correlated to this ecological site include: Colby (20-60 percent slopes), Sulco (20 to 60 percent slopes), and Sully (20 to 60 percent slopes)

Other soil series that have been correlated to this site include: Colby (20 to 60 percent slopes)

Parent Material Kind: loess
Parent Material Origin: mixed
Surface Texture: loam, silt loam, fine sandy loam
Surface Texture Modifier: none

Subsurface Texture Group: loamy
Surface Fragments ≤ 3" (% Cover): 0
Surface Fragments > 3" (%Cover): 0
Subsurface Fragments ≤ 3" (% Volume): 0
Subsurface Fragments > 3" (% Volume): 0

	Minimum	Maximum
Drainage Class:	well	well
Permeability Class:	moderate	moderate
Depth (inches):	0	60
Electrical Conductivity (mmhos/cm)*:	0	4
Sodium Absorption Ratio*:	0	9
Soil Reaction (1:1 Water)*:	7.4	9.0
Soil Reaction (0.1M CaCl2)*:	N/A	N/A
Available Water Capacity (inches)*:	9.7	12.4
Calcium Carbonate Equivalent (percent)*:	0	15

*These attributes represent 0-40 inches in depth or to the first restrictive layer.

Plant Communities

Ecological Dynamics of the Site:
The plant community for this site is dynamic due to the complex interaction of many ecological processes. The interpretive plant community for this site is the Historic Climax Plant Community (HCPC). The HCPC has been determined by the study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing strategies. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

This site developed with occasional fires being part of the ecological processes. Historically, it is believed that the fires were infrequent, randomly distributed, and started by lightning at various times throughout the season when thunderstorms were likely to occur. It is also believed that pre-European inhabitants may have used fire as a management tool for attracting herds of large migratory herbivores (bison, elk, deer and pronghorn). The impact of fire over the past 100 years has been relatively insignificant due to the human control of wildfires.

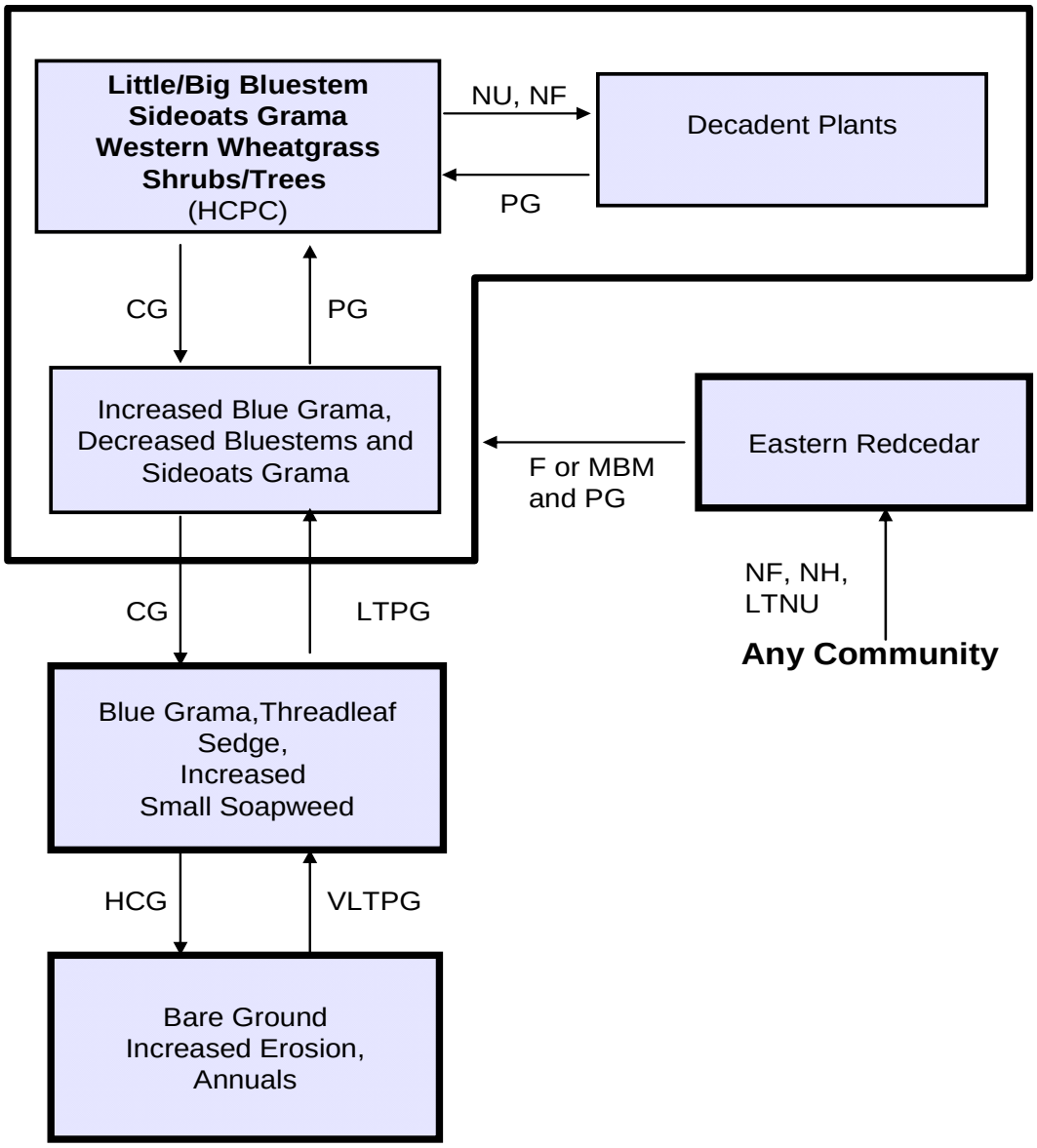
Continuous grazing that does not allow for adequate recovery opportunities between grazing events causes this site to deteriorate. Grasses such as little bluestem, sideoats grama, and switchgrass; decrease in both frequency and production. Grasses and grass-likes such as blue grama and threadleaf sedge will increase if proper recovery periods between grazing events are not allowed during the growing season. Mid and tall grasses will eventually be removed from the plant community. Red threeawn, fringed sagebrush, small soapweed and cheatgrass will increase or invade the site. In time, continuous use in combination with high stock densities or long term non-use (rest) and lack of fire will result in large amounts of bare ground.

Erosion in the form of gullies caused by concentrated flow and livestock trailing is a common problem on the steeper portion of the site. These problems are accentuated with long term heavy grazing pressure.

Growth of native cool season plants begins about April 15, and continues to about June 15. Native warm season plants begin growth about May 15, and continue to about August 15. Fall green up of cool season plants may occur in September and October if adequate moisture is available.

The following diagram illustrates the common plant communities that can occur on the site and the transition pathways (arrows) among communities. Bold lines surrounding each plant community or communities represent ecological thresholds. The ecological processes are discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CG - continuous grazing without adequate recovery periods, **F -** fire, **HCG** - heavy continuous grazing, **HCPC** - Historic Climax Plant Community, **LTPG** - long term prescribed grazing (>40 years), **MBM** - mechanical brush management, **NF** - no fire, **NH** - no harvest, **NU** – no-use, **LTNU** – long term non use,> 25 years, **PG** - prescribed grazing with adequate recovery periods, **VLTPG** - very long term prescribed grazing (>80 years)

Plant Community Composition and Group Annual Production

			Little Bluestem, Sideoats Grama, Blue Grama (HCPC)		
COMMON/GROUP NAME	**SCIENTIFIC NAME**	**SYMBOL**	**Group**	**lbs./acre**	**% Comp**
GRASSES & GRASS-LIKES			*1*	*1330 - 1710*	*70 - 90*
little bluestem	Schizachyrium scoparium	SCSC	1	285 - 570	15 - 30
sideoats grama	Bouteloua curtipendula	BOCU	1	190 - 380	10 - 20
blue grama	Bouteloua gracilis	BOGR2	1	95 - 190	5 - 10
big bluestem	Andropogon gerardii	ANGE	1	95 - 285	5 - 15
western wheatgrass	Pascopyrum smithii	PASM	1	95 - 285	5 - 15
green needlegrass	Nassella viridula	NAVI4	1	19 - 190	1 - 10
needleandthread	Hesperostipa comata ssp. comata	HECOC8	1	19 - 133	1 - 7
buffalograss	Bouteloua dactyloides	BODA2	1	19 - 95	1 - 5
hairy grama	Bouteloua hirsuta	BOHI2	1	19 - 95	1 - 5
plains muhly	Muhlenbergia cuspidata	MUCU3	1	19 - 57	1 - 3
prairie sandreed	Calamovilfa longifolia	CALO	1	0 - 57	0 - 3
Canada wildrye	Elymus canadensis	ELCA4	1	19 - 38	1 - 2
prairie junegrass	Koeleria macrantha	KOMA	1	0 - 38	0 - 2
sand dropseed	Sporobolus cryptandrus	SPCR	1	19 - 38	1 - 2
bottlebrush squirreltail	Elymus elymoides	ELEL5	1	0 - 19	0 - 1
tall dropseed	Sporobolus compositus var. compositus	SPCOC2	1	19 - 38	1 - 2
sun sedge	Carex inops ssp. heliophila	CAINH2	1	19 - 57	1 - 3
red threeawn	Aristida purpurea var. longiseta	ARPUL	1	0 - 38	0 - 2
needleleaf sedge	Carex duriuscula	CADU6	1	19 - 38	1 - 2
threadleaf sedge	Carex filifolia	CAFI	1	19 - 95	1 - 5
other perennial grasses		2GP	1	0 - 95	0 - 5
FORBS			*2*	*95 - 190*	*5 - 10*
western ragweed	Ambrosia psilostachya	AMPS	2	0 - 19	0 - 1
white prairie clover	Dalea candida	DACA7	2	19 - 57	1 - 3
bigtop dalea	Dalea enneandra	DAEN	2	19 - 38	1 - 2
purple prairie clover	Dalea purpurea	DAPU5	2	0 - 19	0 - 1
purple coneflower	Echinacea angustifolia	ECAN2	2	0 - 19	0 - 1
scarlet gaura	Gaura coccinea	GACO5	2	0 - 19	0 - 1
dotted gayfeather	Liatris punctata	LIPU	2	19 - 38	1 - 2
stiffstem flax	Linum rigidum	LIRI	2	0 - 19	0 - 1
rush skeletonplant	Lygodesmia juncea	LYJU	2	0 - 19	0 - 1
Nuttall's sensitive-briar	Mimosa nuttallii	MINU6	2	0 - 19	0 - 1
common evening-primrose	Oenothera biennis	OEBI	2	0 - 19	0 - 1
penstemon	Penstemon spp.	PENST	2	0 - 19	0 - 1
slimflower scurfpea	Psoralidium tenuiflorum	PSTE5	2	0 - 19	0 - 1
prairie coneflower	Ratibida columnifera	RACO3	2	19 - 38	1 - 2
heath aster	Symphyotrichum ericoides	SYER	2	0 - 19	0 - 1
aromatic aster	Symphyotrichum oblongifolium	SYOB	2	0 - 19	0 - 1
stemless hymenoxys	Tetraneuris acaulis	TEAC	2	0 - 19	0 - 1
other perennial forbs		2FP	2	0 - 95	0 - 5
SHRUBS			*3*	*95 - 285*	*5 - 15*
fringed sagebrush	Artemisia frigida	ARFR4	3	0 - 38	0 - 2
fourwing saltbush	Atriplex canescens	ATCA2	3	0 - 95	0 - 5
broom snakeweed	Gutierrezia sarothrae	GUSA2	3	0 - 19	0 - 1
winterfat	Krascheninnikovia lanata	KRLA2	3	19 - 57	1 - 3
plains pricklypear	Opuntia polyacantha	OPPO	3	0 - 19	0 - 1
chokecherry	Prunus virginiana	PRVI	3	19 - 95	1 - 5
skunkbush sumac	Rhus trilobata	RHTR	3	19 - 95	1 - 5
golden current	Ribes aureum	RIAU	3	19 - 57	1 - 3
prairie rose	Rosa arkansana	ROAR3	3	19 - 38	1 - 2
western snowberry	Symphoricarpos occidentalis	SYOC	3	19 - 57	1 - 3
small soapweed	Yucca glauca	YUGL	3	19 - 57	1 - 3
other shrubs		2SHRUB	3	0 - 95	0 - 5
TREES			*4*	*19 - 95*	*1 - 5*
common hackberry	Celtis occidentalis	CEOC	4	19 - 38	1 - 2
eastern redcedar	Juniperus virginiana	JUVI	4	19 - 95	1 - 5

Annual Production lbs./acre	LOW	RV*	HIGH
GRASSES & GRASS-LIKES	605 -	1511	- 1905
FORBS	90 -	143	- 195
SHRUBS	90 -	190	- 300
TREES	15	57	100
TOTAL	800 -	1900	- 2500

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. *RV = Representative value.

Plant Community Narratives

Little/Big Bluestem, Sideoats Grama, Western Wheatgrass, Shrubs/Trees Plant Community

The interpretive plant community for this site is the Historic Climax Plant Community (HCPC). The natural potential vegetation of this community is a mixed grass prairie. The potential vegetation is approximately 70-90% grasses or grass-like plants, 5-10% forbs, 5-15% shrubs, and 1-5% trees. Little bluestem, big bluestem, sideoats grama, and western wheatgrass are the dominant species in this community. Secondary species include blue grama, hairy grama, needleandthread, and sedges. Forb and shrub population includes white prairie clover, purple prairie clover, dotted gayfeather, skunkbush sumac, chokecherry, golden currant, prairie rose, and snowberry. Winterfat occurs in the western portion of the MLRA. Trees that occupy this community are hackberry and Eastern redcedar. Grazing management that includes adequate deferment periods and proper stocking is needed to improve or maintain its present condition.

This plant community is diverse and productive. The water cycle is functioning properly. Plant litter is uniformly distributed and provides protection from soil erosion, reduces evaporation from the soil surface, and promotes good water infiltration into the soil profile. The plant community is well suited to drought conditions due to the diversity of species.

Total annual production ranges from 800 to 2500 pounds of air-dried vegetation per acre per year and will average 1900 pounds.

The following is the growth curve expected during a normal year:
Growth Curve Number: KS7201
Growth Curve Name: Cool season/warm season co-dominant; upland fine textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	10	20	30	20	10	5	3	0	0

(monthly percentages of total annual growth)

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

- Continuous grazing will convert this plant community to the *Increased Blue Grama; Decreased Bluestems and Sideoats Grama Plant Community.*
- Prescribed grazing with adequate recovery periods will maintain the *Little/Big Bluestem, Sideoats Grama, Western Wheatgrass, and Shrubs/Trees (HCPC) Plant Community.*
- Non-use or no-fire will lead to the *Decadent Plants Plant Community*. No fire, no harvest and long term non-use will convert this and "Any Plant Community" plant community to the *Eastern Redcedar Plant Community*

Increased Blue Grama; Decreased Bluestems and Sideoats Grama Plant Community

This plant community developed with continuous grazing without adequate recovery periods during the growing season. Blue grama and/or threadleaf sedge has increased significantly. Little bluestem, big bluestem, and sideoats grama have been reduced but are still present. Forbs that have increased include hairy goldaster, western ragweed, and slimflower scurfpea. Fourwing saltbush and winterfat are reduced where they occur in the western portion of the MLRA. Small soapweed and fringed sagebrush have increased.

Management changes can move this plant community toward HCPC given adequate time. Soil erosion may be a concern as major grasses and shrub species have been reduced in frequency and production. Less litter is obvious. Where flow paths are connected, rills and pedestalled plants may begin to form. Water and nutrient cycles as well as energy flow have been impaired. Caution should be taken not to push this plant community across an ecological threshold where restoration back to a sustainable plant community would be difficult.

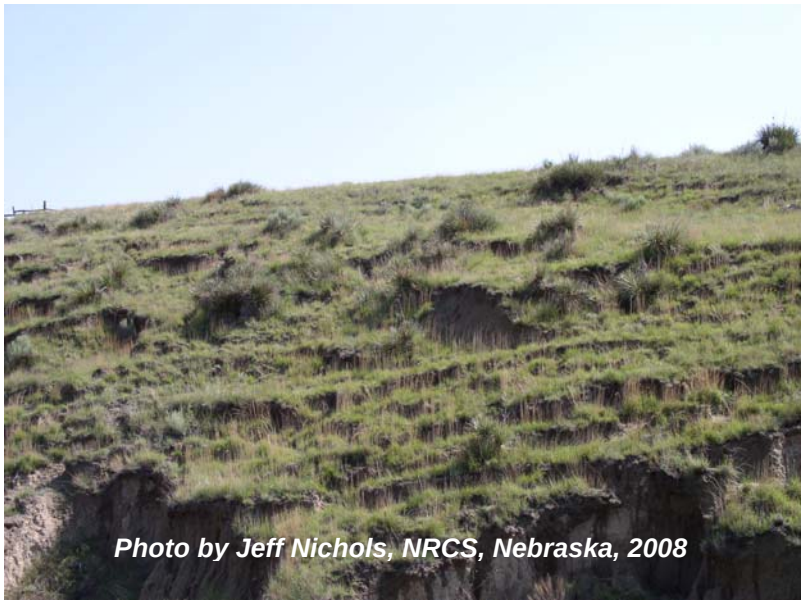


Photo by Jeff Nichols, NRCS, Nebraska, 2008

Total annual production, during an average year, ranges from 500 to 1800 pounds of air-dry weight and will average 1300 pounds.

The following is the growth curve expected during a normal year:
Growth Curve Number: KS7201
Growth Curve Name: Cool season/warm season co-dominant; upland fine textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	10	20	30	20	10	5	3	0	0

(monthly percentages of total annual growth)

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

- Continuous grazing will shift this plant community across an ecological threshold to Blue *Grama/Threadleaf Sedge, Increased Small Soapweed Plant Community.*
- Prescribed grazing with adequate recovery periods will move this plant community back to the *Little/Big Bluestem, Sideoats Grama, Western Wheatgrass, and Shrubs/Trees (HCPC) Plant Community.*

Decadent Plants Plant Community

This plant community developed under many years of non-use (rest) and lack of fire. Plant species resemble the HCPC however; frequency and production will be reduced. Eventually, litter levels can become high enough to cause stagnation and mortality of various species such as little bluestem, sideoats grama, green needlegrass, and needleandthread. Bunchgrasses typically develop dead centers and rhizomatous species form small communities because of a lack of stimulation by grazers.

Management changes can easily shift this plant community toward the HCPC. Non-disturbance will initially increase litter levels, minimizing soil erosion. In advanced stages of non-use (rest) or lack of fire, plants will begin to die off and bare areas will increase causing an erosion concern.

Total annual production ranges from 500 to 1200 pounds of air-dried vegetation per acre per year.

The following is the growth curve expected during a normal year:
Growth Curve Number: KS7203
Growth Curve Name: Excess litter; upland fine textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	5	18	25	20	14	12	5	0	0

(monthly percentages of total annual growth)

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

- Prescribed grazing will move this plant community to a *Little/Big Bluestem, Sideoats Grama, Western Wheatgrass, and Shrubs/Trees (HCPC) Plant Community.*

Blue Grama/Threadleaf Sedge, Increased Small Soapweed Plant Community

This plant community developed with continued grazing without adequate recovery periods between grazing events. Blue grama and/or threadleaf sedge dominates this community. Little bluestem, western wheatgrass and sideoats grama are scattered in remnant amounts. Tall grasses have been almost totally removed where not protected by remaining shrubs or steep topography. Forbs and shrubs that have increased are western ragweed, hairy goldaster, fringed sagebrush, and small soapweed. Compared to HCPC, nearly all the mid-grasses are absent and some weedy annual species such as cheatgrass and kochia have invaded the area.

Management changes cannot easily move this plant community toward HCPC. Species diversity and production have been greatly reduced. Lack of proper recovery periods have cause dramatic shifts away from the HCPC. Soil erosion is expedited by increased rill formation, especially on steeper slopes. Water and nutrient cycles are impaired. Desertification is obvious.

Production ranges from 400 to 1000 pounds of air-dry vegetation per acre per year and averages 750 pounds.

The following is the growth curve expected during a normal year:
Growth Curve Number: KS7204
Growth Curve Name: Warm season dominant; upland fine textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	0	10	45	30	10	5	0	0	0

(monthly percentages of total annual growth)

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

- Heavy continuous grazing will shift this plant community across an ecological threshold to the *Bare Ground, Increased Erosion, and Annuals Plant Community*.
- Long term prescribed grazing that provides adequate recovery opportunity between grazing events and proper stocking will move this plant community toward the *Increased Blue Grama; Decreased Bluestems and Sideoats Grama Plant Community* assuming an adequate seed/vegetative source is available. This transition may take 40 years or more to achieve.

Bare Ground, Increased Erosion, Annuals Plant Community

This plant community develops with continual grazing and lack of recovery periods during the growing season. Bare ground has significantly increased. Localized areas of blue grama and little bluestem can still be found in protected areas surrounded by bare ground. Red threeawn, sand dropseed, and ring muhly are the main surviving perennial grasses. Small soapweed remains. Cheatgrass, sixweeks fescue and kochia have increased or invaded. Compared to HCPC, all desirable grasses, forbs and shrubs have been removed or extremely reduced.

Advanced stages of erosion are apparent. Rills are obvious and small gullies can form on areas where vegetation has been removed. Pedestalled plants with exposed roots are common. Renovation costs would be significant.

Total annual production, during an average year, ranges from 150 to 550 pounds of air-dry weight and will average 400 pounds.

The following is the growth curve expected during a normal year:
Growth Curve Number: KS7205
Growth Curve Name: Early successional, bare ground; upland fine textured soils

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	5	15	45	20	10	3	0	0	0

(monthly percentages of total annual growth)

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

- Very long term prescribed grazing will move this plant community back to the *Blue Grama/Threadleaf Sedge, Increased Small Soapweed Plant Community* and eventually to the HCPC assuming adequate seed/vegetative sources exist. This transition can take greater than 80 years to accomplish depending on the severity of degradation.

Eastern Redcedar Plant Community

Remnant populations of Eastern redcedar were able to escape wildfire due to rough topography which provided protection and caused random patterns of burns. Early pioneers and settlers harvested much of the timber for lumber, fence posts, and firewood. Lack of fire, non-use by browsing animals, and lack of timber harvest accelerates the increase. In higher canopy cover situations, soil erosion will increase. The water cycle is significantly altered under higher canopies. Infiltration is reduced because of rainfall interception by the canopy. Runoff is increased.

Total annual production during an average year varies significantly, depending on the percentage of canopy cover.

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

- Mechanical brush management or fire combined with prescribed grazing will move this plant community back to the *Little/Big Bluestem, Sideoats Grama, and Western Wheatgrass, Shrubs/Trees (HCPC) Plant Community* or associated successional plant communities.

- No fire, no harvest and long term non-use will convert “Any Plant Community” to the *Eastern Redcedar Plant Community*

Ecological Site Interpretations

Animal Community – Wildlife Interpretations (under development)

Animal Preferences (Quarterly – 1,2,3,4†)

Common Name	Cattle				Sheep				Horses				Deer				Antelope				Bison				Elk			
Grasses and Grass-likes																												
big bluestem	U	D	P	D	U	D	U	U	U	D	P	D	U	D	U	U	U	D	U	U	U	D	P	D	U	D	P	D
blue grama	U	D	P	U	D	P	P	D	U	D	P	U	D	P	P	D	D	P	P	D	U	D	P	U	U	D	P	U
bottlebrush squirreltail	U	D	U	U	N	D	U	N	U	D	U	U	N	D	U	N	N	D	U	N	U	D	U	U	U	D	U	U
buffalograss	U	U	D	U	N	U	D	U	U	U	D	U	N	U	D	U	N	U	D	U	U	U	D	U	U	U	D	U
Canada wildrye	U	D	U	U	N	U	N	N	U	D	U	U	N	U	N	N	N	U	N	N	U	D	U	U	U	D	U	U
green needlegrass	U	P	U	D	N	P	N	P	U	P	U	D	N	P	N	P	N	P	N	P	U	P	U	D	U	P	U	D
hairy grama	U	D	P	U	D	P	P	D	U	D	P	U	D	P	P	D	D	P	P	D	U	D	P	U	U	D	P	U
little bluestem	U	D	D	U	N	D	N	N	U	D	D	U	N	D	N	N	N	D	N	N	U	D	D	U	U	D	D	U
needleandthread	U	D	U	D	N	D	N	U	U	D	U	D	N	D	N	U	N	D	N	U	U	D	U	D	U	D	U	D
needleleaf sedge	U	D	U	D	U	P	N	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D
plains muhly	U	U	D	U	U	U	D	U	U	U	D	U	N	N	N	N	N	N	N	N	U	U	D	U	U	U	D	U
prairie junegrass	U	D	U	D	N	D	N	U	U	D	U	D	N	D	N	U	N	D	N	U	U	D	U	D	U	D	U	D
prairie sandreed	U	D	D	U	U	D	U	U	U	D	D	U	U	U	D	U	U	U	D	U	U	D	D	U	U	D	D	U
red threeawn	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
sand dropseed	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N
sideoats grama	U	D	P	U	U	P	D	U	U	D	P	U	U	P	D	U	U	P	D	U	U	D	P	U	U	D	P	U
sun sedge	U	D	U	D	U	P	N	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D
tall dropseed	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N	N	U	N	N
threadleaf sedge	U	D	U	D	U	P	N	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D	U	D
western wheatgrass	U	P	D	U	N	D	N	N	U	P	D	U	N	D	N	N	N	D	N	N	U	P	D	U	U	P	D	U
Forbs																												
aromatic aster	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	N	N	N	N
bigtop dalea	U	D	P	U	U	P	P	U	U	D	P	U	U	P	P	U	U	P	P	U	U	D	P	U	U	P	P	U
common evening-primrose	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
dotted gayfeather	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	P	P	U
heath aster	U	U	D	U	U	U	P	U	U	U	D	U	U	U	P	U	U	U	P	U	U	U	D	U	U	U	P	U
Nuttall's sensitive-briar	U	D	P	U	U	P	P	U	U	D	P	U	U	P	P	U	U	P	P	U	U	D	P	U	U	P	P	U
penstemon	U	U	U	U	U	P	P	U	U	U	U	U	U	P	P	U	U	P	P	U	U	U	U	U	U	P	P	U
prairie coneflower	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	P	P	U
purple coneflower	U	U	D	U	U	P	P	U	U	U	D	U	U	P	P	U	U	P	P	U	U	U	D	U	U	P	P	U
purple prairie clover	U	D	P	U	U	P	P	U	U	D	P	U	U	P	P	U	U	P	P	U	U	D	P	U	U	P	P	U
rush skeletonplant	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	U	U	U	U
scarlet guara	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
slimflower scurfpea	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
stemless hymenoxys	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
stiffstem flax	U	U	U	U	N	U	U	N	U	U	U	U	N	U	U	N	N	U	U	N	U	U	U	U	N	U	U	N
western ragweed	U	U	U	U	N	N	N	N	U	U	U	U	N	N	N	N	N	N	N	N	U	U	U	U	N	N	N	N
white prairie clover	U	D	P	U	U	P	P	U	U	D	P	U	U	P	P	U	U	P	P	U	U	D	P	U	U	P	P	U
Shrubs																												
broom snakeweed	N	N	N	N	U	U	U	U	N	N	N	N	U	U	U	U	U	U	U	U	N	N	N	N	U	U	U	U
chokecherry	D	T	T	D	D	T	T	D	D	T	T	D	P	U	D	P	D	U	U	D	D	T	T	D	P	U	U	P
fourwing saltbush	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P	P	D	D	P
fringed sagebrush	U	U	U	U	U	U	U	U	U	U	U	U	U	D	D	U	U	P	P	D	U	U	U	U	U	U	U	D
golden current	U	D	D	U	U	P	P	D	U	D	D	U	U	P	P	D	U	U	U	U	U	D	D	U	U	P	P	D
plains pricklypear	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
prairie rose	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U
skunkbush sumac	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D	D	U	U	D
small soapweed	D	N	N	D	D	U	U	D	D	N	N	D	D	U	U	D	D	U	U	D	D	N	N	D	D	U	U	D
western snowberry	U	U	U	U	U	U	U	U	U	U	U	U	D	U	D	D	U	U	U	U	U	U	U	U	D	U	U	U
winterfat	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Trees																												
eastern redcedar	U	N	N	U	U	N	N	U	U	N	N	U	D	U	U	D	U	N	N	U	U	N	N	U	U	N	N	U
hackberry	N	U	D	U	N	D	D	U	N	U	D	U	N	D	D	U	N	U	D	U	N	U	D	U	N	D	D	U

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

† Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions however, *continuous grazing is not recommended.* 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 (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 the following stocking rate 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.

Plant Community	Production (lbs./acre)	*Stocking Rate (AUM/acre)
Little/Big Bluestem, Sideoats Grama, Western Wheatgrass (HCPC)	1900	0.52
Increased Blue Grama; Decreased Bluestems and Sideoats Grama	1300	0.36
Blue Grama/Threadleaf Sedge; Increased Soapweed	750	0.21
Bare Ground, Increased Erosion; Annuals	400	0.11
Decadent Plants	**	**

* Based on 912 lbs./acre (air-dry weight) per Animal Unit Month (AUM), and on 25% harvest efficiency (refer to USDA NRCS, National Range and Pasture Handbook).

** Highly variable; stocking rate needs to be determined on site.

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 (under development)

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B. Infiltration and runoff potential for this site is moderate. 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 shortgrasses 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 NRCS Section 4, National Engineering Handbook (NEH-4) for runoff quantities and hydrologic curves).

Recreational Uses

This site provides hunting, hiking, photography, bird watching and other opportunities. The wide varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

This site can provide a source for fence posts, firewood, mulch and lumber.
No appreciable wood products are present on the site.

Other Products

None noted.

Supporting Information

Associated Sites

(072XA015KS) – Loamy Upland
(072XA012KS) – Limy Upland
(072XA013KS) – Loamy Lowland

Similar Sites

(072XA012KS) – Limy Upland
[gentler slopes,]

Inventory Data References

Information presented here has been derived from NRCS clipping data, numerous ocular estimates and other inventory data. Field observations from experienced range- trained personnel were used extensively to develop this ecological site description. Specific data information is contained in individual landowner/user case files and other files located in county NRCS field offices.

Those involved in developing this site description include: Harvey Sprock, Rangeland Management Specialist, NRCS, Colorado; Josh Saunders, Rangeland Management Specialist, NRCS Colorado ; Herman Garcia, State Rangeland Management Specialist, Colorado ; Carol Eakins, Rangeland Management Specialist, NRCS, Nebraska; Chuck Markley, Soil Scientist, NRCS, Nebraska; Jeff Nichols, Rangeland Management Specialist, NRCS, Nebraska; Mary Schrader, Resource Conservationist NRCS, Nebraska; Dana Larsen, State Rangeland Management Specialist, Nebraska; Joan Gienger, District Conservationist, NRCS, Kansas; Ted Houser, District Conservationist, NRCS, Kansas; David Kraft, State Rangeland Management Specialist, Kansas;.

State Correlation

This site has been correlated with Colorado, Kansas, and Nebraska in MLRA -72.

Field Offices

Colorado: Akron, Burlington, Cheyenne Wells, Eads, Flagler, Holly, Holyoke, Julesburg, Sterling, Yuma, Wray
Kansas: Atwood, Colby, Goodland, Gove, Hoxie, Oakley, Oberlin, Sharon Springs, St. Francis
Nebraska: Curtis, Grant, Hayes Center, Imperial, Kimball, McCook, North Platte, Ogallala, Oshkosh, Sidney, Trenton

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (http://hpcc.unl.edu)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (http://wcc.nrcs.usda.gov)

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (http://nasis.nrcs.usda.gov)

USDA, NRCS. 2002. The PLANTS Database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Site Description Approval

_____ _____
State Range Management Specialist (Kansas) Date

_____ _____
State Range Management Specialist (Colorado) Date

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State Range Management Specialist (Nebraska) Date