USDA Natural Resources Conservation Service

Ecological site R078BY088TX
Sandy Loam 19-26" PZ

Last updated: 9/15/2023
Accessed: 05/12/2024

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.

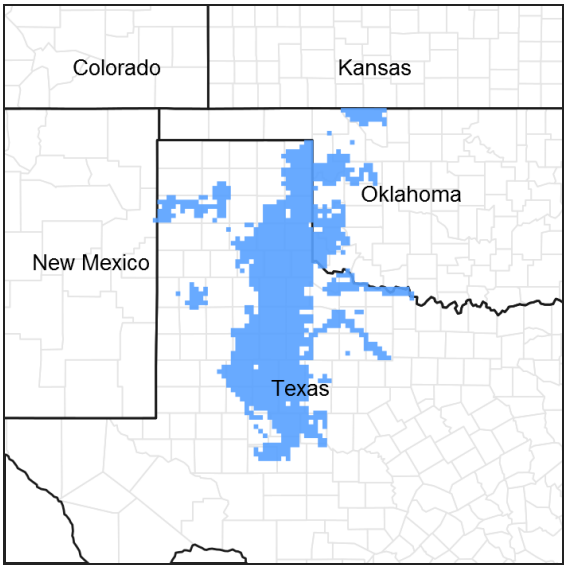


Figure 1. Mapped extent

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.

MLRA notes

Major Land Resource Area (MLRA): 078B–Central Rolling Red Plains, Western Part

MLRA 78B is characterized by strongly dissected, rolling plains with prominent ridges and valleys and rolling to steep irregular topography. Loamy soils are generally well drained, range from shallow to deep, and developed in sediments of Triassic and Permian age.

LRU notes

NA

Classification relationships

This ecological site is correlated to soil components at the Major Land Resource Area (MLRA) level which is further described in USDA Ag Handbook 296.

Ecological site concept

These sites occur on deep sandy loam soils on uplands. Reference vegetation consists of midgrasses with some tallgrasses and forbs. Few woody species occur under reference conditions. Abusive grazing practices can lead to

a shift in the plant community. Without periodic fire or alternative brush management, woody species may increase.

Associated sites

R078BY072TX	**Clay Loam 19-26" PZ** Clay loam soils on uplands
R078BY082TX	**Loamy Sand 19-26" PZ** Loamy sand soils on uplands
R078BY086TX	**Sandy 19-26" PZ** Rolling sandy soils under shinnery oak

Similar sites

R078CY110TX	**Sandy Loam 23-31" PZ** Similar site in MLRA 78C

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Bouteloua curtipendula* (2) *Panicum obtusum*

Physiographic features

This site occurs as nearly level to moderately sloping uplands on terrace pediments in the western rolling plains. Slopes vary from 0 to as much as 12 %.

Table 2. Representative physiographic features

Landforms	(1) Plains > Terrace (2) Plains > Outwash plain (3) Plains > Alluvial fan
Runoff class	Negligible to medium
Flooding frequency	None
Ponding frequency	None
Elevation	305–945 m
Slope	0–12%
Water table depth	152–203 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate of the western rolling plains is dry, sub-humid with hot summers and mild winters. Temperatures often reach 100 degrees F for several consecutive days during summer. Cold spells with temperatures less than 20 degrees F only last short periods of time. The soil is not frozen below the 3-inch depth for more than 2 to 3 days. Humidity is low during the winter and early spring months. Sometimes relative humidity is high enough to make summer days seem uncomfortable. Most of the precipitation comes in the form of rain and that in the spring and early summer principally. May is the wettest month followed by June. July and August are dryer and much hotter. Rainfall often comes as intense showers of relatively short duration. Rainfall rate per hour is often high and runoff is significant. Infiltration is diminished due to lack of opportunity time. The growing season begins in April and ends with the first killing frost in November. There is little snowfall with the average being about 10 inches. Rainfall averages about 22 inches.

There is a 70% chance that yearly precipitation will fall between 16 and 24 inches. About 55% of the time, the yearly rainfall is below the mean. Dry spells during the growing season are common and long-term droughts occur in cycles of about 20 years. Native vegetation is principally warm season.

Table 3. Representative climatic features

Frost-free period (characteristic range)	189-194 days
Freeze-free period (characteristic range)	204-222 days
Precipitation total (characteristic range)	584-610 mm
Frost-free period (actual range)	184-201 days
Freeze-free period (actual range)	202-223 days
Precipitation total (actual range)	559-635 mm
Frost-free period (average)	192 days
Freeze-free period (average)	213 days
Precipitation total (average)	584 mm

Climate stations used

- (1) WELLINGTON [USC00419565], Wellington, TX
- (2) PADUCAH [USC00416740], Paducah, TX
- (3) JAYTON [USC00414570], Jayton, TX
- (4) SNYDER [USC00418433], Snyder, TX
- (5) ROBERT LEE [USC00417669], Robert Lee, TX

Influencing water features

Non stream characteristics – moderate permeability, runoff slight to moderately high.

Stream Type: There are no streams or wetlands associated with this Sandy Loam ecological site.

Wetland description

NA

Soil features

The soils of this site are moderately deep to very deep well drained, neutral soils on nearly level to moderately sloping terrain. Surface texture is fine sandy loam with sandy clay loam subsoils. Fertility is moderate, permeability moderate to moderately rapid and water holding capacity moderate. Productivity is moderately high when erosion has been minimal. Subsoils are easily penetrated by plant roots. These soils have a good plant-soil-water-relationship. A large percent of these soils are presently cropped.

Soil series that characterize the site: Miles fine sandy loam, Altus fine sandy loam, Cobb fine sandy loam. The Miles series best typifies the site.

These soils are classified as typic paleustalfs and typic haplustalfs

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained

Permeability class	Slow to moderately rapid
Depth to restrictive layer	102–203 cm
Soil depth	102–203 cm
Surface fragment cover <=3"	0–2%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	4.57–17.27 cm
Calcium carbonate equivalent (0-101.6cm)	0–10%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–2
Soil reaction (1:1 water) (0-101.6cm)	6.1–9
Subsurface fragment volume <=3" (Depth not specified)	0–9%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The reference plant community consists of a mixture of midgrasses with lesser amounts of shortgrass and tallgrass species, along with a respectable amount of forbs and scattered woody plants. It could be classified as a true mixed-grass prairie. The productivity is fairly high due to a deep soil and a good soil, plant, air, water relationship. The main grass species are sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), vine mesquite (*Panicum obtusum*), and lesser amounts of little bluestem (*Schizachyrium scoparium*). There are also moderate amounts of Arizona cottontop (*Digitaria californica*), plains bristlegrass (*Setaria vulpiseta*), sand dropseed (*Sporobolus cryptandrus*), hooded windmillgrass (*Chloris cucullata*), and fall witchgrass (*Digitaria cognata*) present. In certain locations small amounts of sand bluestem (*Andropogon hallii*) and Indiangrass (*Sorghastrum nutans*) are present.

Forbs are present in moderate amounts in the reference community but are moisture dependent. Forbs will range from 8 to 12 % of total vegetative composition by weight. Major perennial forb species include catclaw sensitivebriar (*Mimosa nuttallii*), Engelmanndaisy (*Engelmannia peristenia*), prairie acacia (*Acacia angustissima*), green eyes (Berlandiera spp.), Rushpea (Hoffmannseggia spp.), scarlet gaura (Gaura spp.), Western ragweed (*Ambrosia psilostachya*), scarlet globemallow (*Sphaeralcea coccinea*), halfshrub sundrop (*Calylophus berlandieri*), and dotted gayfeather (*Liatris punctata*). The main woody species are sand sagebrush (*Artemisia filifolia*), catclaw (Mimosa spp.), yucca (Yucca spp.), occasional condalia (Condalia spp.), and mesquite (*Prosopis glandulosa*). Mesquite is usually much more prevalent present day than historically. If this site is subjected to abusive grazing practices, the vegetative community will lose the tallgrasses and much of the midgrasses fairly rapidly. Shortgrass species will increase along with annual forbs. Mesquite is the major woody increaser although catclaw and yucca can also act as increasers.

Grazing by large herbivores played a major role in shaping the site vegetatively. Large herds of bison often grazed the site and domestic livestock prefer it as well. As bison migrated with the seasons, these sites received heavy grazing pressure from time to time but had long recovery periods. Continuous heavy grazing with domestic livestock has occurred on many sandy loam sites and deterioration of the original plant community has been the result.

Natural fire also played a major role in grassland ecology. The general role of fire seems to have been to perpetuate grasslands and keep any encroaching woody vegetation at bay. Fires may have occurred as often as every 7 to 12 years on the average and this site usually had an above average fuel load compared to some other plains sites. There is documentation from the mid 1800's that mention mesquite being present in the western rolling plains but it seems to indicate that most mesquite occurred along water courses and in scattered locations

throughout an otherwise total grassland ecosystem. Fire likely kept most woody species suppressed and favored the mid and tallgrasses. Forb diversity was also promoted by periodic fires, which was beneficial to the wildlife population.

Grazing pressure began to be severe in the 1880's and the diversity and productivity of the site has generally declined except where excellent management has been practiced for long periods. The taller warm-season grasses such as Indiangrass and sand bluestem have disappeared in most instances. If abusive grazing is practiced for many years, midgrasses will give way to increasing buffalograss (*Bouteloua dactyloides*) and blue grama, along with hooded windmillgrass, and sand dropseed. These shortgrasses can adapt better to grazing pressure. The more desirable forbs decrease rapidly with abuse and western ragweed increases with a host of annual forbs. In some cases, annual grasses such as Japanese brome (Bromus japonicus) and little barley (*Hordeum pusillum*) begin to be competitive. Perennial three-awn (*Aristida purpurea*) invades with long-term abuse and can dominate areas within a site. If good plant cover is not maintained on this site, erosion from water can become a problem. Small gullies may appear and bare ground increases. Infiltration is decreased and runoff increases.

In reference condition good grass cover and a variety of species made this site desirable for deer, turkey, and many ground nesting birds. Small mammals and predators such as coyotes and bobcats find the site attractive as well. In historic climax, the site did not have sufficient woody cover to sustain whitetail deer but this has changed over the past 150 years and many of these sites have an abundance of woody cover. It is difficult to find large acreages of this site in near reference condition.

Poor cover and decreased plant diversity brought about by poor grazing management disrupt the natural processes such as the water cycle and nutrient cycle. The site has the capacity to store a good deal of water in the soil profile but poor vegetative cover inhibits this process. If little water enters the soil, then the more productive grass species tend to do poorly. Opportunistic plants such as weedy forbs and shortgrasses decrease the long term stability of the site. Deeper rooted grasses and forbs are more efficient at nutrient cycling and aid in reducing surface runoff.

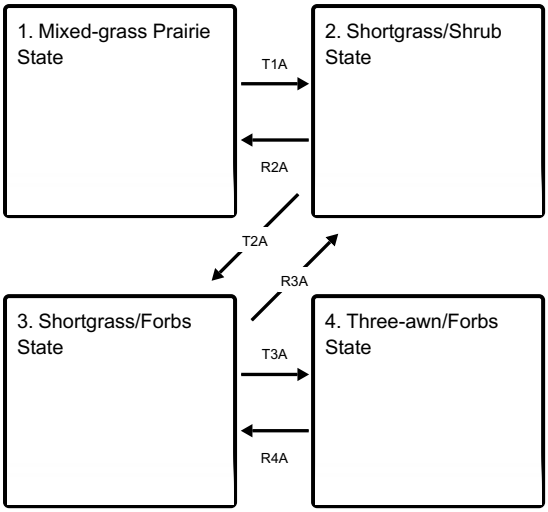
Plant Communities and Transitional Pathways (diagram)

Narrative:
As a site changes in the structure and makeup of the plant community, the changes may be due to management or due to natural occurrences or both. Changes may occur slowly or fairly rapidly, depending on the type of events that effect change. At some point in time thresholds are crossed, which means that once changes in vegetative makeup have progressed to a certain point, the balance of the community has been altered. When this point is reached, a return to the former community state is generally not possible – unless some significant energy inputs are provided to induce a response in that direction. These changes in plant communities occur on all ecological sites with some being more resistant to changes than other sites. Some sites seem to be more resilient and are more easily restored to former vegetative states than are other sites. Usually, changes in grazing management alone, such as improvement in grazing techniques, will not be sufficient to induce the desired change in plant communities. An example of energy input that might be needed to induce change might be the implementation of chemical brush management and complete growing season rest in order to reduce the domination of woody shrubs and promote the dominance of perennial grasses and forbs. This action might have to be done more than once and might take some time. Such a vegetative shift would not be possible with grazing management alone. The amount of energy input needed to effect change depends on present vegetation and the desired result.

The following diagram suggests some of the more predictable pathways the vegetation on this site may take when subjected to poor grazing management. This diagram generally depicts some of the same situations shown in the photographs of the plant communities.

State and transition model

Ecosystem states



T1A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

R2A - Adequate rest from defoliation and removal of woody canopy, followed by reintroduction of historic disturbance regimes

T2A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

R3A - Adequate rest from defoliation and removal of woody canopy

T3A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

R4A - Adequate rest from defoliation and removal of woody canopy

State 1 submodel, plant communities

1.1. Mixed-grass Prairie Community

State 2 submodel, plant communities

2.1. Shortgrass/Mesquite Community

State 3 submodel, plant communities

3.1. Shortgrass/Annual Forbs Community

State 4 submodel, plant communities

4.1. Three-awn/Annual Forbs Community

State 1
Mixed-grass Prairie State

The Mixed-grass Prairie Community is mainly warm-season mid and tallgrass dominant with a variety of perennial forbs. There are scattered woody species encompassing less than ten percent woody canopy.

Dominant plant species

- sideoats grama (*Bouteloua curtipendula*), grass
- vine mesquite (*Panicum obtusum*), grass

Community 1.1
Mixed-grass Prairie Community

Figure 8. 1.1 Mixed-grass Prairie Community

The reference community for this site is midgrasses with smaller amounts of short and tallgrass species. Scattered sand sage is also part of this community. Mesquite and catclaw mimosa are present in small amounts. Production is moderately high. This plant community picture above lacks a tallgrass presence and the amount of blue grama is slightly more than a site would have in reference condition. Sideoats grama, blue grama, Arizona cottontop and vine mesquite are seen along with scattered perennial forbs of various species, and approximately 15% woody canopy. Diversity is above average for the site and production is good.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1233	1849	2242
Forb	112	168	224
Shrub/Vine	112	140	202
Microbiotic Crusts	28	39	39
Tree	6	11	22
Total	**1491**	**2207**	**2729**

Figure 10. Plant community growth curve (percent production by month). TX2014, Mid and tall warm season grasses - climax. Mid and tall warm season grasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	6	13	20	28	12	4	8	4	2	1

State 2
Shortgrass/Shrub State

The Shortgrass/Mesquite Community is a shortgrass dominant with decreasing diversity of species. Woody plant cover increasing to fifteen percent canopy.

Dominant plant species

- sand sagebrush (*Artemisia filifolia*), shrub
- buffalograss (*Bouteloua dactyloides*), grass
- threeawn (*Aristida*), grass

Community 2.1
Shortgrass/Mesquite Community

Figure 11. 2.1 Shortgrass/Mesquite Community

This plant community is dominated by low vigor blue grama with an increasing canopy of mesquite. There are still small amounts of midgrasses such as sideoats grama present.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	897	1233	1681
Forb	140	168	224
Shrub/Vine	140	168	224
Tree	11	22	34
Microbiotic Crusts	11	17	17
Total	**1199**	**1608**	**2180**

Figure 13. Plant community growth curve (percent production by month). TX2015, Shortgrass/Mesquite community. Growth curve shows increase plant growth due to increase of woody species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	3	10	25	30	9	4	10	4	2	1

State 3
Shortgrass/Forbs State

This plant community consists of shortgrass species, considerable annual forbs and increasing woody plants such as sand sage and scattered mesquite. There is an increase in bare ground and very few productive mid grasses left. This site is low in productivity and the grass plants are in low vigor.

Dominant plant species

- buffalograss (*Bouteloua dactyloides*), grass
- Engelmann's daisy (*Engelmannia peristenia*), other herbaceous
- curlycup gumweed (*Grindelia squarrosa*), other herbaceous

Community 3.1
Shortgrass/Annual Forbs Community

Figure 14. 3.1 Shortgrass/Annual Forbs Community

This plant community consists of shortgrass species, considerable annual forbs and increasing woody plants. There is an increase in bare ground and very few productive midgrasses left. A community of scattered blue grama, hooded windmillgrass and threeawn with ragweed, curlycup gumweed and various annual forbs would be expected. In the background is sand sage and scattered mesquite. This site is low in productivity and the grass plants are in low vigor.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	673	897
Forb	280	392	448
Shrub/Vine	179	224	336
Tree	34	39	39
Microbiotic Crusts	11	22	22
Total	**952**	**1350**	**1742**

Figure 16. Plant community growth curve (percent production by month). TX2016, Shortgrass with Annual Forbs. Shortgrass/Annual forbs with increase of woody plants..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	6	20	28	20	5	3	8	5	3	1

State 4
Three-awn/Forbs State

The Three-awn/Annual Forbs Community is dominated by perennial threeawn with scattered mesquite and sand sage.

Dominant plant species

- threeawn (*Aristida*), grass
- Cuman ragweed (*Ambrosia psilostachya*), other herbaceous

Community 4.1
Three-awn/Annual Forbs Community

Figure 17. 4.1 Three-awn/Annual Forbs Community

This community is dominated by perennial threeawn with scattered mesquite and sand sage. Other grasses present in small amounts are fall witchgrass, fringed signalgrass and gummy lovegrass. Few of the reference community species are present.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	504	673	785
Forb	112	224	280
Shrub/Vine	112	168	224
Tree	17	28	39
Microbiotic Crusts	11	17	22
Total	**756**	**1110**	**1350**

Figure 19. Plant community growth curve (percent production by month). TX2017, Perennial Threeawn/Annual Forbs. Perennial threeawn with annual forbs and scattered woody canopy..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	5	18	25	28	5	3	8	4	2	1

Transition T1A
State 1 to 2

With Heavy Continuous Grazing, no fires, and Brush Invasion, the Mixed-grass Prairie State will Transition into the Shortgrass/Shrub State.

Restoration pathway R2A
State 2 to 1

With the application of various conservation practices including Prescribed Grazing, Brush Management, and Prescribed Burning, the Shortgrass/Shrub State can be restored back to the Mixed-grass Prairie State.

Conservation practices

Brush Management
Prescribed Burning

Prescribed Grazing

Transition T2A
State 2 to 3

With Heavy Continuous Grazing, No Brush Management, no fires, and Brush Invasion, the Shortgrass/Shrub State will transition into the Shortgrass/Forb State.

Restoration pathway R3A
State 3 to 2

With the application of various conservation practices including Prescribed Grazing, Brush Management, and Prescribed Burning, the Shortgrass/Forbs State can be restored back to the Shortgrass/Shrub State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Transition T3A
State 3 to 4

With Heavy Continuous Grazing, No Brush Management, no fires, and Brush Invasion, the Shortgrass/Forbs State will transition into the Three-awn/Forbs State.

Restoration pathway R4A
State 4 to 3

With the application of various conservation practices including Prescribed Grazing, Brush Management, Range Planting, and Prescribed Burning, the Three-awn/Forbs State can be restored back to the Shortgrass/Forbs State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing
Range Planting
Integrated Pest Management (IPM)

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Tallgrasses**			90–168	
	sand bluestem	ANHA	*Andropogon hallii*	34–112	–
	Indiangrass	SONU2	*Sorghastrum nutans*	34–112	–
2	**Tall/midgrasses**			673–1255	
	sideoats grama	BOCU	*Bouteloua curtipendula*	392–785	–
	little bluestem	SCSC	*Schizachyrium scoparium*	140–308	–

	bristlegrass	SETAR	*Setaria*	34–84	–
	Arizona cottontop	DICA8	*Digitaria californica*	34–84	–
	vine mesquite	PAOB	*Panicum obtusum*	34–84	–
3	**Shortgrasses**			252–476	
	blue grama	BOGR2	*Bouteloua gracilis*	168–308	–
	hooded windmill grass	CHCU2	*Chloris cucullata*	28–84	–
	buffalograss	BODA2	*Bouteloua dactyloides*	28–84	–
4	**Cool-season Grasses**			34–84	
	Canada wildrye	ELCA4	*Elymus canadensis*	17–56	–
	Texas bluegrass	POAR	*Poa arachnifera*	17–45	–
5	**Mid/Shortgrasses**			84–196	
	sand dropseed	SPCR	*Sporobolus cryptandrus*	28–84	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	22–56	–
	fall witchgrass	DICO6	*Digitaria cognata*	22–56	–
	composite dropseed	SPCOC2	*Sporobolus compositus var. compositus*	11–34	–
6	**Midgrasses**			50–112	
	purple threeawn	ARPU9	*Aristida purpurea*	22–56	–
	signalgrass	BRACH	*Brachiaria*	11–28	–
	gummy lovegrass	ERCU	*Eragrostis curtipedicellata*	11–28	–
Forb					
7	**Forbs**			112–224	
	Forb, annual	2FA	*Forb, annual*	0–56	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–56	–
	white sagebrush	ARLUM2	*Artemisia ludoviciana ssp. mexicana*	0–56	–
	lyreleaf greeneyes	BELY	*Berlandiera lyrata*	0–56	–
	yellow sundrops	CASE12	*Calylophus serrulatus*	0–56	–
	whitemouth dayflower	COERE	*Commelina erecta var. erecta*	0–56	–
	purple prairie clover	DAPU5	*Dalea purpurea*	0–56	–
	Engelmann's daisy	ENGEL	*Engelmannia*	0–56	–
	eastern daisy fleabane	ERAN	*Erigeron annuus*	0–56	–
	scarlet beeblossom	GACO5	*Gaura coccinea*	0–56	–
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	0–56	–
	stiffleaf false goldenaster	HEST3	*Heterotheca stenophylla*	0–56	–
	rushpea	HOFFM	*Hoffmannseggia*	0–56	–
	trailing krameria	KRLA	*Krameria lanceolata*	0–56	–
	dotted blazing star	LIPU	*Liatris punctata*	0–56	–
	sensitive plant	MIMOS	*Mimosa*	0–56	–
	Fendler's penstemon	PEFE	*Penstemon fendleri*	0–56	–
	slimflower scurfpea	PSTE5	*Psoralidium tenuiflorum*	0–56	–
	pitcher sage	SAAZG	*Salvia azurea var. grandiflora*	0–56	–
Shrub/Vine					
8	**Shrubs**			112–202	

	sand sagebrush	ARFI2	*Artemisia filifolia*	0–50	–
	fragrant mimosa	MIBO2	*Mimosa borealis*	0–50	–
	honey mesquite	PRGL2	*Prosopis glandulosa*	0–50	–
	Oklahoma plum	PRGR	*Prunus gracilis*	0–50	–
	soapweed yucca	YUGL	*Yucca glauca*	0–50	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0–50	–
Tree					
9	**Trees**			6–22	
	hackberry	CELTI	*Celtis*	0–22	–
	western soapberry	SASAD	*Sapindus saponaria var. drummondii*	0–22	–

Animal community

This site supports a variety of small mammals, grassland birds, and predators. White tail deer utilize the site when woody cover is sufficient. Dove and quail are present when diversity is greater and a good forb population exists. Wild turkey feed in the open areas when plant diversity is high. In degraded condition the site has less attraction for most species.

Hydrological functions

This is an upland site that contributes runoff to small and medium sized drainages. With good vegetative cover runoff is reduced and water erosion is minimal. With poor cover runoff is significant and water erosion is usually a problem.

Recreational uses

Hunting, camping, hiking, and horseback riding.

Wood products

None.

Other products

None.

Other information

None.

Inventory data references

The information in this document is based on long term observations of well managed ranges, several years of clipping data, NRCS FOTG Range Site Descriptions (both past and present): and numerous historical accounts of vegetation present at the time of settlement of the area. Several individual sites were visited and the vegetation inventoried.

Inventory Data References: NRCS 417 production data collected over 8 years was reviewed.

Other references

J.R. Bell, USDA-NRCS Rangeland Management Specialist (retired)
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Acknowledgments

Site Development and Testing Plan:

Future work, as described in a Project Plan, to validate the information in this Provisional Ecological Site Description is needed. This will include field activities to collect low, medium and high intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document.

Annual reviews of the Project Plan are to be conducted by the Ecological Site Technical Team.

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.

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Date	09/04/2007
Approved by	Bryan Christensen
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to slight.

2. **Presence of water flow patterns:** None to slight.

3. **Number and height of erosional pedestals or terracettes:** None to slight.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 20 to 25% bare ground.

5. **Number of gullies and erosion associated with gullies:** None to slight.

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

7. **Amount of litter movement (describe size and distance expected to travel):** None to slight.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Resistant to surface erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Fine sandy loam; friable surface; medium SOM.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Basal cover and density with small interspaces should make rainfall impact minimal. This site has moderate permeability, runoff is slow and available water holding capacity is high.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.

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: Warm-season midgrasses >

    Sub-dominant: Warm-season tallgrasses > Warm-season shortgrasses >

    Other: Cool-season midgrasses > Shrubs/Vines = Forbs

    Additional:

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

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14. **Average percent litter cover (%) and depth (in):** Litter is dominantly herbaceous.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1,300 to 2,450 pounds per acre.

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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:** Sand sagebrush and yucca can be invasive.

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17. **Perennial plant reproductive capability:** All plant species should be capable of reproduction except during periods of prolonged drought conditions, heavy natural herbivory or intense wildfires.
