

# Ecological site R078BY701TX Shallow Sandstone 19-26" PZ

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## 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.

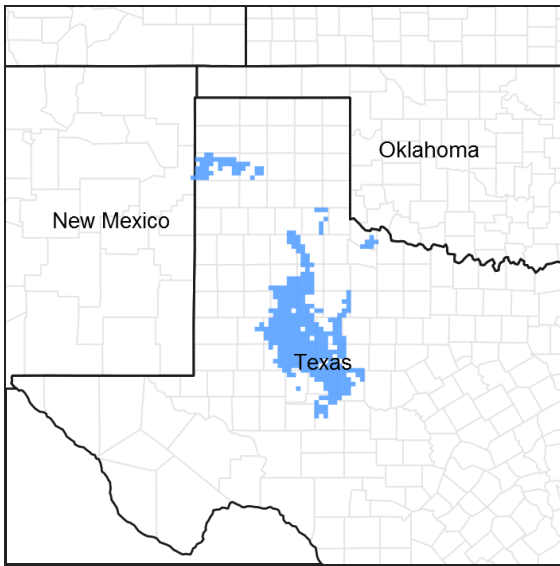


Figure 1. Mapped extent

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 shallow soils on uplands. Reference vegetation includes midgrasses and shortgrasses with forbs and scattered woody plants. Abusive grazing practices can lead to a shift in the plant community. Without fire

or alternative brush management, woody species may increase on the site.

## Associated sites

R078BY076TX	<b>Gyp 19-26" PZ</b> Shallow soils over gypsum
R078BY084TX	<b>Rough Breaks 19-26" PZ</b> Shallow soils on breaks
R078BY090TX	<b>Shallow Clay 19-26" PZ</b> Shallow clay soils on uplands
R078BY092TX	<b>Very Shallow Clay 19-26" PZ</b> Very shallow soils on uplands

**Table 1. Dominant plant species**

Tree	(1) <i>Juniperus pinchotii</i>
Shrub	Not specified
Herbaceous	(1) <i>Schizachyrium scoparium</i> (2) <i>Bouteloua curtipendula</i>

## Physiographic features

This is an upland site with very shallow soils mixed with outcrops of Permian and Triassic sandstone. It occurs on ridges, low hills, side slopes along drainageways and along escarpments. Slopes are moderate to moderately steep. There are often sandstone fragments mixed with shale and siltstone on the soil surface and often sandstone bedrock will be showing. The site may be small to relatively large, varying from 50 to over 1000 acres in size. The actual soils are so intermingled with rock outcrops that they cannot be separated.

This site may be encountered at any aspect of the landscape.

**Table 2. Representative physiographic features**

Landforms	(1) Plains > Ridge (2) Plains > Escarpment (3) Plains > Hill
Runoff class	Low to medium
Flooding frequency	None
Ponding frequency	None
Elevation	411–975 m
Slope	1–20%
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)	189-199 days
Freeze-free period (characteristic range)	202-222 days
Precipitation total (characteristic range)	584 mm
Frost-free period (actual range)	184-203 days
Freeze-free period (actual range)	201-223 days
Precipitation total (actual range)	559-584 mm
Frost-free period (average)	193 days
Freeze-free period (average)	213 days
Precipitation total (average)	584 mm

### Climate stations used

- (1) WELLINGTON [USC00419565], Wellington, TX
- (2) MATADOR [USC00415658], Matador, TX
- (3) SPUR [USC00418566], Spur, TX
- (4) SNYDER [USC00418433], Snyder, TX
- (5) ROBERT LEE [USC00417669], Robert Lee, TX

### Influencing water features

Rapid runoff due to impermeable soil material and steep slopes.

There are no streams or wetlands associated with this ecological site.

### Wetland description

NA

### Soil features

Soils are very shallow, well drained and calcareous with limited soil development. Rock outcrops are intermingled with soil material. Geologic erosion has stripped away soil material exposing bedrock in many places. Layers of sandstone may be quite thick and are interlaid with sandy to clayey redbeds. The soil is generally loam to fine sandy loam in texture with stony or gravelly modifier. Underlying material is pale brown strongly cemented sandstone. Available water holding capacity is low and fertility is low. Plant growth and production is limited due to shallow depth. Cracks in underlying bedrock can allow water to penetrate. Shrubs and grasses with deep root systems may be able to access some of this moisture.

Major Soil Taxonomic Units correlated to this site include: Latom soils and Latom Rock Outcrop.

**Table 4. Representative soil features**

Parent material	(1) Residuum–sandstone
Surface texture	(1) Fine sandy loam (2) Gravelly fine sandy loam

Drainage class	Well drained
Permeability class	Moderately slow to moderate
Depth to restrictive layer	10–51 cm
Soil depth	10–51 cm
Surface fragment cover <=3"	5–40%
Surface fragment cover >3"	1–5%
Available water capacity (0-101.6cm)	1.02–3.05 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
Soil reaction (1:1 water) (0-101.6cm)	7.9–8.4
Subsurface fragment volume <=3" (Depth not specified)	3–22%
Subsurface fragment volume >3" (Depth not specified)	1–3%

## Ecological dynamics

This reference plant community is dominated by tall and midgrasses with a good perennial forb population and a variety of short shrubs. Some juniper occurs on the site along with occasional mesquite. The site occurs in rougher terrain and is found along escarpments and drainageways within the rolling red plains. The parent material is sandstone and rock outcrops are mixed with soil material. Production potential is limited due to shallow depth of soil and by steep terrain.

Slopes vary from moderate to steep but usually fall into the 5 to 20 % slope range. Runoff is rapid and infiltration limited. Evaporation is high. Plant basal cover is generally sparse but varies. Cracks and fissures in the underlying sandstone trap water in some locations and plants can sometimes access this water. Lack of inherent fertility may affect palatability of plants. This site is not as prone to over utilization as some sites with deeper, more fertile soils. Because of it's diversity of plant species, the site is utilized by a variety of wildlife. There are several desirable forb and shrub species that afford good quality browse.

Natural fire shaped the ecology of this site as with most plains grassland sites. Grasses such as little bluestem (*Schizachyrium scoparium*), sand bluestem (*Andropogon hallii*), and sideoats grama (*Bouteloua curtipendula*) are stimulated by periodic fire. Redberry juniper (*Juniperus pinchotii*) is suppressed but usually resprouts and attains pre-burn status within a few years. But in general, shrubs are suppressed sufficiently to allow for a grassland aspect to exist. Cacti species (*Opuntia* spp) are damaged by fire provided sufficient fuel exists to insure an intense burn. Wildfires are thought to have occurred perhaps every 8 to 15 years in the region depending on fuel accumulation and random lightning strikes. Native Americans sometimes purposely set fires to influence grazing by large herbivores. Due to relatively thin vegetative cover, limited fuel loads and protective terrain, some susceptible shrub species have been naturally protected from wildfire damage on some portions of the site. If not naturally burned, juniper will increase on the site and can form a significant canopy cover in some areas. Overgrazing by livestock will reduce the more palatable grass and forb species. Cattle will generally not spend as much time on this site but will selectively graze when there.

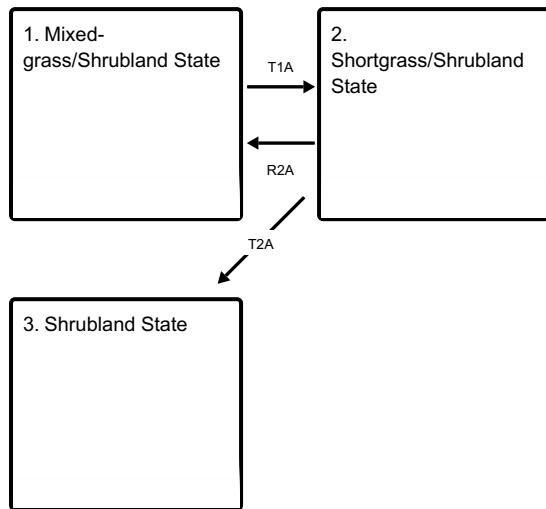
The main influences that drive the ecology of the site are: climatic variability, occurrence of / or lack of fire, shallow soils, and selective grazing or browsing by livestock and wildlife. Geologic erosion can have an effect on portions of the site. The site can deteriorate through mismanagement and is sensitive to abuse.

Plant Communities and Transitional Pathways (diagram):

The following diagram suggests some pathways that the vegetation on this site might take. There may be other states not shown on the diagram. This information is intended to show what might happen in a given set of circumstances; it does not mean that this would happen the same way in every instance. Local professional guidance should always be sought before pursuing a treatment scenario.

## State and transition model

### Ecosystem states

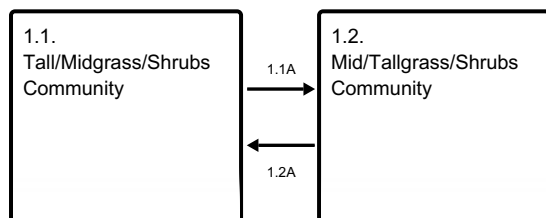


**T1A** - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

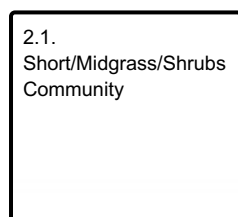
**R2A** - Adequate rest from defoliation and removal of woody canopy, followed by reintroduction of historic disturbance regimes

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

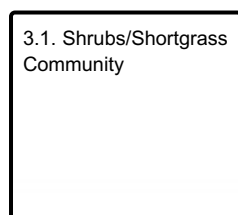
### State 1 submodel, plant communities



### State 2 submodel, plant communities



### State 3 submodel, plant communities



## State 1

### Mixed-grass/Shrubland State

The interpretive or "reference" plant community for the Tall/Midgrass/Shrubs Community (1.1) is a balanced mixture of tallgrasses such as little bluestem and sand bluestem; midgrasses such as sideoats grama and a few shortgrasses such as blue grama, buffalograss, and hairy grama. There is also a variety of perennial forbs including

dotted gayfeather, plains blackfoot daisy, heath aster, western ragweed, gaura, and catclaw sensitivebriar. There are also scattered short woody shrubs in this community including feather dalea, skunkbush sumac, and vine ephedra. A few scattered redberry juniper, mesquite, and hackberry trees also occur. The Mid/Tallgrass/Shrubs Community (1.2) occurs when tallgrasses such as little bluestem and sand bluestem decrease and midgrasses such as sideoats grama, sand dropseed, and silver bluestem dominate. There is an increase in perennial three-awns. Some low growing shrubs such as feather dalea, pricklypear, elbowbush, and yucca also occur. Redberry juniper increases to ten to fifteen percent woody canopy.

### Dominant plant species

- Pinchot's juniper (*Juniperus pinchotii*), tree
- little bluestem (*Schizachyrium scoparium*), grass
- sideoats grama (*Bouteloua curtipendula*), grass

## Community 1.1 Tall/Midgrass/Shrubs Community



Figure 8. 1.1 Tall/Midgrass/Shrubs Community

The interpretive or "reference" plant community for this site is a balanced mixture of tallgrasses - little bluestem (*Schizachyrium scoparium*), sand bluestem (*Andropogon hallii*); midgrasses - sideoats grama (*Bouteloua curtipendula*) and a few short grasses – blue grama (*Bouteloua gracilis*), buffalograss (*Buchloe dactyloides*) and hairy grama (*Bouteloua hirsuta*), a variety of perennial forbs – dotted gayfeather, (*Liatris punctata*), plains blackfoot daisy (*Melampodium leucanthum*), heath aster (*Aster ericoides*), western ragweed (*Ambrosia psilostachya*), gaura (*Gaura* spp), catclaw sensitivebriar (*Mimosa nuttallii*), and scattered short woody shrubs – feather dalea (*Dalea formosa*), skunkbush sumac (*Rhus trilobata*), and vine ephedra (*Ephedra pedunculata*). A few scattered redberry juniper (*Juniperus pinchotii*), mesquite (*Prosopis glandulosa*) and hackberry (*Celtis* spp.) trees also occur.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	560	897	1121
Tree	28	67	112
Shrub/Vine	56	67	101
Forb	56	112	101
Microbiotic Crusts	11	22	28
<b>Total</b>	<b>711</b>	<b>1165</b>	<b>1463</b>

Figure 10. Plant community growth curve (percent production by month). TX2047, Tall & Midgrass with Shrubs community. mid and tallgrasses, forbs and shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	4	6	10	20	24	10	5	10	7	2	1

## Community 1.2 Mid/Tallgrass/Shrubs Community



Figure 11. 1.2 Mid/Tallgrass/Shrubs Community

This community represents the first phase in the transition of the Tall/Midgrass/Shrubs Community (1.1) toward the Mid/Shortgrass/Shrubs Community (1.2). Tallgrasses such as little bluestem and sand bluestem decrease and midgrasses such as sideoats grama, sand dropseed (*Sporobolus cryptandrus*) and silver bluestem (*Bothriochloa laguroides*) dominate with some increase in perennial three-awns (*Aristida* spp.) with some low growing shrubs such as feather dalea, pricklypear (*Opuntia* spp.), elbowbush (*Forestiera pubescens*) and yucca (*Yucca glauca*). Redberry juniper increases to 10-15% woody canopy. Proper grazing and the use of prescribed burning can maintain or possibly restore this community to the reference community and prevent the transition toward the Shortgrass/Shrubland State. With further heavy continued grazing and fire suppression, the community will degrade toward the Short/Midgrass/Shrubs Community (2.1).

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	673	897
Tree	39	84	168
Shrub/Vine	84	95	112
Forb	45	56	67
Microbiotic Crusts	6	11	22
<b>Total</b>	<b>622</b>	<b>919</b>	<b>1266</b>

Figure 13. Plant community growth curve (percent production by month).  
TX2048, Midgrasses and forbs. warm-season midgrasses and forbs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	5	20	25	17	8	15	4	1	1

## Pathway 1.1A Community 1.1 to 1.2



Tall/Midgrass/Shrubs Community



Mid/Tallgrass/Shrubs Community

With heavy continuous grazing and no fires, the Tall/Midgrass/Shrubs Community will shift to the Mid/Tallgrass/Shrubs Community.

### Pathway 1.2A Community 1.2 to 1.1



Mid/Tallgrass/Shrubs Community



Tall/Midgrass/Shrubs Community

With Prescribed Grazing and Prescribed Burning, the Mid/Tallgrass/Shrubs Community can be reverted back to the Tall/Midgrass/Shrubs Community.

### Conservation practices

Prescribed Burning
Prescribed Grazing

## State 2 Shortgrass/Shrubland State

The Short/Midgrass/Shrubs Community (2.1) occurs when little and sand bluestem decrease significantly, allowing midgrasses such as perennial three-awn, silver bluestem, and slim tridens to increase. Sideoats grama decreases in dominance and vigor. Shortgrasses such as buffalograss, hairy grama, and hairy tridens increase in density. Climax forbs decrease in frequency and diversity. Woody shrubs such as feather dalea, elbowbush and skunkbush sumac increase. Redberry juniper increases to 20% woody canopy.

### Dominant plant species

- juniper (*Juniperus*), tree
- featherplume (*Dalea formosa*), shrub
- skunkbush sumac (*Rhus trilobata*), shrub
- buffalograss (*Bouteloua dactyloides*), grass

### Community 2.1 Short/Midgrass/Shrubs Community





Figure 14. 2.1 Short/Midgrass/Shrubs Community

The Short/Midgrass/Shrubs Community (2.1) occurs when little and sand bluestem decrease significantly, allowing midgrasses such as perennial three-awn, silver bluestem, and slim tridens (*Tridens mutica*) to increase. Sideoats grama decreases in dominance and vigor. Shortgrasses such as buffalograss, hairy grama, and hairy tridens (*Erioneuron pilosum*) increase in density. Climax forbs decrease in frequency and diversity. Woody shrubs such as feather dalea, elbowbush and skunkbush sumac increase. Redberry juniper increases to 20% woody canopy. More intense management using Prescribed Burning and Prescribed Grazing will be necessary to prevent further degradation to the Shrubs/Shortgrass Community (3.1). Brush management may be necessary to prevent competition from juniper.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	336	504	673
Tree	56	146	224
Shrub/Vine	90	112	135
Forb	22	34	45
Microbiotic Crusts	–	6	11
<b>Total</b>	<b>504</b>	<b>802</b>	<b>1088</b>

Figure 16. Plant community growth curve (percent production by month). TX2049, shortgrass, shrubs & forbs community. warm- and cool-season forbs, shrubs and shortgrasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	8	16	25	5	5	10	16	8	3

### State 3 Shrubland State

The Shrubs/Shortgrass Community (3.1) occurs when tallgrasses and midgrasses decrease to the extent that shortgrasses such as hairy grama, hairy tridens, and buffalograss dominate. Forbs decrease in abundance, contributing to increased bare ground, accelerated soil erosion and an increase of juniper more than 25% canopy. Broom snakeweed may increase, further deteriorating the ecology of the site.

#### Dominant plant species

- Pinchot's juniper (*Juniperus pinchotii*), tree
- broom snakeweed (*Gutierrezia sarothrae*), shrub
- hairy grama (*Bouteloua hirsuta*), grass
- buffalograss (*Bouteloua dactyloides*), grass

## Community 3.1 Shrubs/Shortgrass Community



Figure 17. 3.1 Shrubs/Shortgrass Community

The Shrubs/Shortgrass Community (3.1) occurs when tallgrasses and midgrasses decrease to the extent that shortgrasses such as hairy grama, hairy tridens, and buffalograss dominate. Forbs decrease in abundance, contributing to increased bare ground, accelerated soil erosion and an increase of juniper more than 25% canopy. Broom snakeweed (*Gutierrezia sarothrae*) may increase, further deteriorating the ecology of the site. Production of forage available for grazing is less than 25% of the reference plant community. Mechanical Brush Management, Range Planting, and Prescribed Burning followed by prescribed grazing will be mandatory for any restoration of this site to the Mixed-grass/Shrubland State.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	168	280	392
Tree	78	168	280
Shrub/Vine	101	135	168
Forb	11	22	34
Microbiotic Crusts	–	2	6
<b>Total</b>	<b>358</b>	<b>607</b>	<b>880</b>

Figure 19. Plant community growth curve (percent production by month). TX2050, Shrubs and Shortgrass community. shortgrasses, warm- and cool-season forbs, and short shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	8	16	25	5	5	10	16	8	3

### Transition T1A

#### State 1 to 2

With Heavy Continuous Grazing, No Fires, and No Brush Management, the Mixed-grass/Shrubland State can transition into the Shortgrass/Shrubland State.

### Restoration pathway R2A

#### State 2 to 1

With Prescribed Grazing, Brush Management and Prescribed Burning conservation practices, the Shortgrass/Shrubland State can be restored back to the Mixed-grass/Shrubland State.

## Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

## Transition T2A State 2 to 3

With Heavy Continuous Grazing, No Fires, No Brush Management, and Brush Invasion, the Mixed-grass/Shrubland State can transition into the Shrubland State.

## Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>tall/midgrasses</b>			448–588	
	sideoats grama	BOCUC	<i>Bouteloua curtipendula</i> var. <i>caespitosa</i>	224–588	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	224–588	–
2	<b>mid/shortgrasses</b>			112–224	
	Wright's threeawn	ARPUW	<i>Aristida purpurea</i> var. <i>wrightii</i>	0–224	–
	black grama	BOER4	<i>Bouteloua eriopoda</i>	0–224	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	0–224	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0–224	–
	silver beardgrass	BOLAT	<i>Bothriochloa laguroides</i> ssp. <i>torreyana</i>	0–224	–
	hairy woollygrass	ERPI5	<i>Erioneuron pilosum</i>	0–224	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	0–224	–
	slim tridens	TRMU	<i>Tridens muticus</i>	0–224	–
3	<b>tallgrass</b>			140–224	
	sand bluestem	ANHA	<i>Andropogon hallii</i>	0–224	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	0–224	–
4	<b>mid/shortgrass</b>			39–84	
	buffalograss	BODA2	<i>Bouteloua dactyloides</i>	0–84	–
	fall witchgrass	DICO6	<i>Digitaria cognata</i>	0–84	–
	tobosagrass	PLMU3	<i>Pleuraphis mutica</i>	0–84	–
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	0–84	–
<b>Forb</b>					
5	<b>forbs</b>			56–112	
	Forb, annual	2FA	<i>Forb, annual</i>	0–112	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0–112	–
	white sagebrush	ARLUM2	<i>Artemisia ludoviciana</i> ssp. <i>mexicana</i>	0–112	–
	woollypod milkweed	ASER	<i>Asclepias eriocarpa</i>	0–112	–
	yellow sundrops	CASE12	<i>Calylophus serrulatus</i>	0–112	–

	rose heath	CHER2	<i>Chaetopappa ericoides</i>	0–112	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	0–112	–
	spearleaf buckwheat	ERLO4	<i>Eriogonum lonchophyllum</i>	0–112	–
	warty spurge	EUSP	<i>Euphorbia spathulata</i>	0–112	–
	shaggy dwarf morning-glory	EVNU	<i>Evolvulus nuttallianus</i>	0–112	–
	western blanketflower	GASP	<i>Gaillardia spathulata</i>	0–112	–
	hoary false goldenaster	HECA8	<i>Heterotheca canescens</i>	0–112	–
	collegeflower	HYFL	<i>Hymenopappus flavescens</i>	0–112	–
	trailing krameria	KRLA	<i>Krameria lanceolata</i>	0–112	–
	Gordon's bladderpod	LEGO	<i>Lesquerella gordonii</i>	0–112	–
	dotted blazing star	LIPU	<i>Liatris punctata</i>	0–112	–
	hoary blackfoot	MECI	<i>Melampodium cinereum</i>	0–112	–
	plains blackfoot	MELE2	<i>Melampodium leucanthum</i>	0–112	–
	blazingstar	MENTZ	<i>Mentzelia</i>	0–112	–
	Nuttall's sensitive-briar	MINU6	<i>Mimosa nuttallii</i>	0–112	–
	evening primrose	OENOT	<i>Oenothera</i>	0–112	–
	purple locoweed	OXLA3	<i>Oxytropis lambertii</i>	0–112	–
	yellow nailwort	PAVI4	<i>Paronychia virginica</i>	0–112	–
	Fendler's penstemon	PEFE	<i>Penstemon fendleri</i>	0–112	–
	white milkwort	POAL4	<i>Polygala alba</i>	0–112	–
	slimflower scurfpea	PSTE5	<i>Psoralidium tenuiflorum</i>	0–112	–
	earleaf fanpetals	SITR	<i>Sida tragiifolia</i>	0–112	–
	stemmy four-nerve daisy	TESC2	<i>Tetraneuris scaposa</i>	0–112	–
	Rocky Mountain zinnia	ZIGR	<i>Zinnia grandiflora</i>	0–112	–
<b>Shrub/Vine</b>					
6	<b>shrubs/vines</b>			56–101	
	Christmas cactus	CYLE8	<i>Cylindropuntia leptocaulis</i>	0–101	–
	featherplume	DAFO	<i>Dalea formosa</i>	0–101	–
	vine jointfir	EPPE	<i>Ephedra pedunculata</i>	0–101	–
	stretchberry	FOPU2	<i>Forestiera pubescens</i>	0–101	–
	algerita	MATR3	<i>Mahonia trifoliolata</i>	0–101	–
	catclaw mimosa	MIACB	<i>Mimosa aculeaticarpa</i> var. <i>biuncifera</i>	0–101	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	0–101	–
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	0–101	–
	soapweed yucca	YUGL	<i>Yucca glauca</i>	0–101	–
<b>Tree</b>					
7	<b>trees</b>			28–112	
	netleaf hackberry	CELAR	<i>Celtis laevigata</i> var. <i>reticulata</i>	0–112	–
	Pinchot's juniper	JUPI	<i>Juniperus pinchotii</i>	0–112	–
	honey mesquite	PRGL2	<i>Prosopis glandulosa</i>	0–112	–

## Animal community

White tail deer and mule deer utilize the site for browsing. The site has little cover for bobwhite quail but scaled quail frequent the site during feeding. The Texas horned lizard is often present along with several species of lizards and snakes. A few species of small mammals often find dens in rock crevices.

## **Hydrological functions**

Runoff water from the site will enter streams lower on the landscape. The site yields considerable runoff due to steep slopes.

## **Recreational uses**

Hunting, Camping, Hiking, Birdwatching, Photography, and Horseback Riding.

## **Wood products**

None.

## **Other products**

None.

## **Other information**

None.

## **Inventory data references**

NRCS FOTG – Section II of the FOTG Range Site Descriptions and numerous historical accounts of vegetative conditions at the time of early settlement in the area were used in the development of this site description. Vegetative inventories were made at several site locations for support documentation. Several years of clipping data were surveyed.

Inventory Data References (documents): NRCS FOTG – Section II - Range Site Descriptions and NRCS Clipping Data summaries over a 20 year period

## **Other references**

Natural Resources Conservation Service - Range Site Descriptions  
USDA-Natural Resources Conservation Service - Soil Surveys & Website soil database  
Rathjen, Frederick W., The Texas Panhandle Frontier, Rev. 1998, Univ. of Texas Press  
Hatch, Brown and Ghandi, Vascular Plants of Texas (An Ecological Checklist)  
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## **Approval**

## 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.

Author(s)/participant(s)	Stan Bradbury, Zone RMS, NRCS, Lubbock, Texas
Contact for lead author	806-791-0581
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:** Due to the percent slopes, rills will be common.

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- 2. Presence of water flow patterns:** Due to the percent slopes, water flow patterns will be common.

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- 3. Number and height of erosional pedestals or terracettes:** Due to the percent slopes, pedestals/terraces will be common.

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- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 25-30% mineral soil; low percentage due to rock fragments scattered throughout the profile.

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- 5. Number of gullies and erosion associated with gullies:** Slight to moderate.

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

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7. **Amount of litter movement (describe size and distance expected to travel):** Slight to moderate.
- 
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** If the soil surface is unprotected by vegetation, the sloping soil is highly susceptible to water erosion.
- 
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**  
Calcareous loam to fine sandy loam; moderate SOM.
- 
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low vegetative cover and percent slopes makes this site susceptible to erosion. This site is a slowly permeable soil, well-draiend and available water holding capacity is low. Plant growth and production is limited due to very shallow depth.
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** 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 tallgrasses >
- Sub-dominant: Warm-season midgrasses > Warm-season shortgrasses >
- Other: Forbs > Shrubs/Vines > Trees
- 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.
- 
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 650 - 1,300 pounds per acre.
- 
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: Juniper and mesquite 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.
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