USDA Natural Resources Conservation Service

Ecological site R077EY571TX
Wet Bottomland 16-24" PZ

Last updated: 9/12/2023
Accessed: 05/10/2025

General information

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

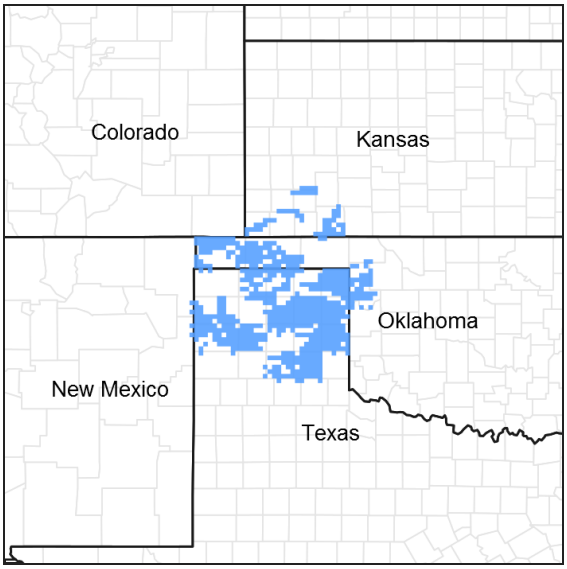


Figure 1. Mapped extent

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

MLRA notes

Major Land Resource Area (MLRA): 077E–Southern High Plains, Breaks

MLRA 77E occurs along moderately sloping breaks and steep escarpments associated with dissecting river systems and erosional margins of the Southern High Plains. Soil temperature regime is thermic and soil moisture regime is ustic bordering on aridic. Loamy and sandy soils are generally well drained, range from shallow to deep, and developed in Ogallala Formation sediments.

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 loamy subirrigated soils on floodplains. The reference vegetation consists of native tallgrasses, forbs, and scattered trees. These areas are often at risk of invasion by salt cedar due to the proximity to water courses and the available water table. Flooding occurs frequently to rarely with very brief to brief duration.

Associated sites

R077EY063TX	**Sand Hills 16-24" PZ** Very sandy soils on higher adjacent undulating to steep dune topography with a mixture of tall and midgrasses, forbs, and few shrub species and bare ground.
R077EY064TX	**Sandy 16-24" PZ** Level to slightly undulating very deep sandy soils on slightly higher floodplains. Tallgrasses, forbs, and scattered trees and shrubs.
R077EY058TX	**Loamy Bottomland 16-24" PZ** Nearly level to very gently sloping, very deep loamy alluvial soils on slightly higher floodplains. Tallgrass dominated plant community with forbs and scattered trees.

Similar sites

R078CY095OK	**Subirrigated Bottomland** A similar site in MLRA 78C.

Table 1. Dominant plant species

Tree	(1) *Populus deltoides*
Shrub	Not specified
Herbaceous	(1) *Panicum virgatum* (2) *Tripsacum dactyloides*

Physiographic features

This site is classified as a bottomland with poorly drained, loamy alluvial soils over water bearing sandy alluvium. Typically, the site occurs along streams and rivers where the water table is high. Other than the riverbed or streambed itself, the site occupies the lowest position on the landscape. Slopes are slightly concave and average 2% or less. There may be slight highs and lows where the water table varies somewhat in depth due to deposition.

Alluvial deposits along major streams occurring as slightly concave bands as a first terrace above the stream channel. These sites are classified as wetlands (wet meadows) in some cases, and may appear as small oasis among otherwise dryer sites.

Table 2. Representative physiographic features

Landforms	(1) Plains > Flood plain (2) River valley > Flood plain (3) River valley > Slough
Runoff class	Negligible to low
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to frequent
Elevation	2,000–4,500 ft
Slope	0–2%
Water table depth	6–48 in
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Runoff class	Negligible to low
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to frequent

Elevation	2,000–4,500 ft
Slope	0–2%
Water table depth	0–48 in

Climatic features

Climate is a cold semi-arid steppe (Koppen-Geiger classification BSk). Summers are hot and winters are cold. Temperature extremes are common. Humidity is generally low, evaporation is high, and short-term droughts are common. Average annual wind speed is 12 mph with highest winds in early spring. The prevailing wind direction is south. Summertime brings strong high pressure systems that build into heat domes with highs in the upper 90 to mid-100 degree F range. Evaporation in summer is high and open pan evaporation exceeds 6 feet per year. Early autumn temperatures are mild, with Canadian and Pacific cold fronts bringing cold air in mid-autumn throughout winter. Arctic air can settle in and dominate for several weeks during winter with very cold air in place for 2 to 3 weeks at a time.

Most of the precipitation comes in the form of rain from May through September. Rainfall events often occur as intense showers of relatively short duration. Snowfall average is about 17 inches but is also variable from 8 to 36 inches annually. Long term droughts are likely to occur every 15 to 20 years and may last 4 to 5 years. Mean precipitation is around 21 inches but varies significantly from year to year. Rainfall amounts over the last 100 years have varied from as little as 9 inches to as much as 37 inches. The probability is about 70% that precipitation will fall between 14 to 24 inches. Growing season averages 190 days. Average first frost is around October 22, and the last freeze of the season occurs around April 15.

Table 4. Representative climatic features

Frost-free period (characteristic range)	146-164 days
Freeze-free period (characteristic range)	184-194 days
Precipitation total (characteristic range)	20-24 in
Frost-free period (actual range)	144-176 days
Freeze-free period (actual range)	180-198 days
Precipitation total (actual range)	19-26 in
Frost-free period (average)	156 days
Freeze-free period (average)	189 days
Precipitation total (average)	22 in

Climate stations used

- (1) GATE [USC00343489], Gate, OK
- (2) FOLLETT [USC00413225], Follett, TX
- (3) CANADIAN [USC00411412], Canadian, TX
- (4) SANFORD DAM [USC00418040], Fritch, TX
- (5) GUYMON MUNI AP [USW00003030], Guymon, OK
- (6) BEAVER [USC00340593], Beaver, OK
- (7) MEADE [USC00145171], Meade, KS
- (8) BOYS RANCH [USC00411000], Vega, TX
- (9) CLARENDON [USW00023072], Clarendon, TX
- (10) LIPSCOMB [USC00415247], Booker, TX
- (11) CHANNING 2 [USC00411649], Channing, TX
- (12) MIAMI [USC00415875], Miami, TX
- (13) COLDWATER [USC00141704], Coldwater, KS
- (14) REYDON 2SSE [USC00347579], Reydon, OK

Influencing water features

The usual high water table enables growth of lush vegetation and is typically not affected by frequent dry periods during the growing season like other sites in this area. Wetland characteristics can be easily distinguished on this site and some obligate wetland plants can be found, but typically the site is dominated by facultative plants. These sites act as a filter for overland flow and can easily become saturated during heavy periods of rainfall especially during the spring. Evaporation is minimized by tall and dense plant growth that shades the soil surface. The site contributes to the stability of the overall riparian system that occurs along major streams and rivers. While the subirrigated soils are subject to endosaturation (water moving vertically upward or horizontally into the profiles), flood events may produce periods episaturation (surface water becoming perched above a layer of low permeability) and lead to a temporary increase in hydrophytic vegetation.

Wetland description

There is high degree of variability to the water status between individual sites. Some areas exhibit wetland hydrology, have hydric soils, and have abundant hydrophytic vegetation. Other dryer grass dominated sites often do not exhibit all three of these characteristics.

Soil features

Soils are mapped for each county within the MLRA. Mapunits are representations of the major soil series component(s) and named accordingly. Each Mapunit is spatially represented on a digital soils map as polygons of different shapes and sizes. Within these Mapunits, there are often minor soil series components included. These minor components are soils that occur within a Mapunit polygon but are of small extent (15% or less of the Mapunit area). However, it is difficult to separate these minor soils spatially due to the scale of soil mapping.

Ecological sites are correlated at the component level of the soil survey. Therefore, a single Mapunit may contain multiple Ecological Sites just as it may contain multiple soil components. This is important to understand when investigating soils and Ecological Sites. A soil survey Mapunit may be correlated to a single Ecological Site based on the major component; however, there may be inclusions of areas of additional Ecological Sites which are correlated to the minor components of that particular soil Mapunit.

These are loamy alluvial sediments with high water tables. Some soils are stratified with heavier surface textures and sandy subsoils. They may be saturated for moderately long periods at certain times of the year. They are moderately low in fertility and have low water holding and fertility holding capacity. They often exhibit hydric characteristics and support some species of hydrophytic vegetation. Plant available water ranges from low to very high and vegetative production is high because of this water availability. Salinity on these sites is variable and ranges from nonsaline to moderately saline. Salt tolerant plant communities (alkali sacaton, inland saltgrass, and tamarisk) occur on sites with significant concentration of salt in the upper parts of the soil profile.

Representative soil components for this site include: Krier, Persimmon, and Sweetwater. Older surveys may also include the Gracemore, Lesho, and Wann series.

Table 5. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Fine sandy loam (2) Loam (3) Clay loam (4) Silty clay loam
Family particle size	(1) Fine-loamy over sandy or sandy-skeletal (2) Coarse-loamy (3) Sandy
Drainage class	Poorly drained to somewhat poorly drained
Permeability class	Moderately slow to moderately rapid
Soil depth	80 in

Surface fragment cover <=3"	0–2%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	0.6–7.2 in
Calcium carbonate equivalent (0-40in)	0–8%
Electrical conductivity (0-40in)	0–16 mmhos/cm
Sodium adsorption ratio (0-40in)	0–85
Soil reaction (1:1 water) (0-40in)	6.6–10
Subsurface fragment volume <=3" (0-40in)	0–8%
Subsurface fragment volume >3" (0-40in)	0%

Ecological dynamics

The information contained in the State and Transition Diagram (STD) and the Ecological Site Description was developed using archeological and historical data, professional experience, and scientific studies. The information presented is representative of a very complex set of plant communities. Not all scenarios or plants are included. Key indicator plants, animals and ecological processes are described to inform land management decisions.
The reference plant community is a mixture of tallgrasses, some grasslike plants and forbs; with a lesser shrub and tree components. Plants growing on the site are those able to grow in soil that is wet and periodically saturated. In many places throughout the site hydrophytic species are prevalent. Available water for plant growth is very high; sometimes too high for many upland species to grow. Productivity on this site is high in comparison with other High Plains sites. Plant diversity is excellent and the site is favorable for many species of wildlife. The mixture of grasses, forbs, and woody plants make the ecological site very valuable for habitat. There are a good variety of both cool-season and warm-season plants available. In some localities, where the ground water is alkaline or slightly salty, the grass vegetation is often dominated by alkali sacaton (*Sporobolus airoides*) along with other species that can tolerate mild salinity and alkalinity.

This site was perhaps more widespread in pre-settlement times before pressure was placed on the Ogallala aquifer by irrigation and stream characteristics were changed by impoundments. Many of the early explorers recorded the presence of many bubbling springs along the Canadian River and tributaries. Water along the streams provided a means for the buffalo to graze from stream to stream in a north to south cycle and back again. Today, many of these sub-irrigated sites are in danger of being lost due to declining ground water and poor management. Many of these sites are now smaller than they were 30 to 50 years ago. There is a tendency for this site to be invaded by non native woody species such as salt cedar (Tamarix spp.) and Russian olive (*Elaeagnus angustifolia*).

Natural fire likely played an important role in the function of most plains sites, especially the tallgrass communities. Tallgrasses such as big bluestem (*Andropogon gerardii*), switchgrass (*Panicum virgatum*), eastern gamagrass (*Tripsacum dactyloides*), and Indiangrass (*Sorghastrum nutans*) were dependent upon fire to stimulate them and remove old growth that would accumulate on the soil surface. Fire also kept shrubs from getting too thick and removed old fallen timber from trees such as cottonwood (Populus spp.). Grasslikes such as rushes (Scirpus spp.) and cattails (Typha spp.) accumulate more old growth than do most tallgrasses; and can sometimes become dominant in the wetter parts of the site. Fire helped keep a balance between the many different vegetation types. Wildlife habitat was improved by opening up canopies and removing barriers to movement. The wet soil acted as an insulator to protect plant roots and lower stems from heat damage so that plant regrowth was rapid.

The presence of water in the semi-arid plains attracts all kinds of grazers and predators as well as birds and small mammals. This site has an abundance of all habitat factors needed: water, nesting and escape cover, and a variety of food plants for turkey, quail, white-tailed deer, as well as a multitude of other species of mammals and birds. Cattle find the site attractive as well and will spend too much time grazing and loafing in these areas if allowed to.

The site can be grazed without damaging the plant community and the riparian characteristics if a time controlled grazing technique is used with a proper stocking rate. However, this can be difficult to accomplish. The tallgrasses generally have growing points that are a few inches above the soil surface and close grazing can damage their reproductive capacity. Abusive grazing will see the taller species giving way to secondary successional species which are better able to cope with grazing pressure.

There are many low order weedy species that also thrive in wet soil and these will dominate if improper management is allowed to continue over many years. Invasive exotics like Russian olive and salt cedar will often invade this site. Even with proper management this can happen, provided a seed source for these species is available. The unique characteristics of the site and the great differences from adjacent sites make special management necessary. Often it may be beneficial to fence this site in such a way as to control and limit access by grazing animals. Occasionally, haying of the tallgrasses is a good alternative to grazing. Prescribed burning may be applicable in some cases to help sustain a diverse community.

State and Transition Diagram:
A State and Transition Diagram for the Wet Bottomland (R077EY571TX) site is depicted below. Thorough descriptions of each state, transition, and pathway follow the model. Experts base this model on available experimental research, field observations, professional consensus, and interpretations. It is likely to change as knowledge increases.
Plant communities will differ across the MLRA because of the natural variability in weather, soils, and aspect. The Reference Plant Community is not necessarily the management goal; other vegetative states may be desired plant communities as long as the Range Health assessments are in the moderate and above category.

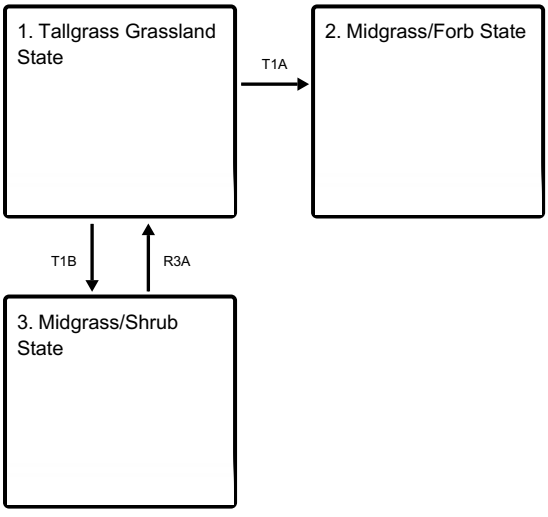
The biological processes on this site are complex. Therefore, representative values are presented in a land management context. The species lists are representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.

Composition by dry weight and percent canopy cover are provided to describing the functional groups. Most observers find it easier to visualize or estimate percent canopy for woody species (trees and shrubs).

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

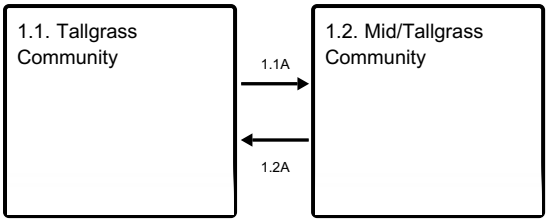


T1A - Prolonged excessive grazing pressure and introduction of non-native species

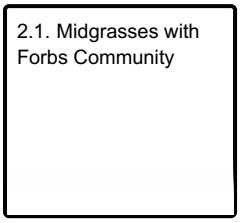
T1B - Absence of disturbance, natural regeneration over time, and excessive grazing pressure

R3A - Removal of woody canopy and reintroduction of historic disturbance return intervals, may be coupled with rangeland seeding

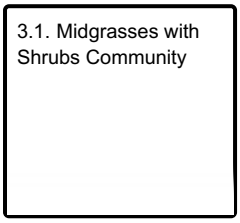
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
Tallgrass Grassland State

This is the reference or diagnostic community for the site. The description is based on early range site descriptions, clipping data, professional consensus of experienced range specialists, and analysis of field work. The interpretive plant community for site is the Tallgrass Community. It is a mixture of tall grasses, forbs, and a few woody shrubs and a few trees. The Mid/Tallgrass plant community shows a bottomland dominated by alkali sacaton with a few other midgrasses, and a few tallgrass species.

Dominant plant species

- eastern cottonwood (*Populus deltoides*), tree
- switchgrass (*Panicum virgatum*), grass
- eastern gamagrass (*Tripsacum dactyloides*), grass

Community 1.1
Tallgrass Community

Figure 8. 1.1 Tallgrass Community

Figure 9. 1.1 Tallgrass Community with gamagrass/cottonwoods

The interpretive plant community for this site is the reference plant community. It is a mixture of tall grasses, forbs, and a few woody shrubs and a few trees. The major grass species are switchgrass, Indiangrass, eastern gamagrass, Canada wildrye (*Elymus canadensis*), and occasionally, prairie cordgrass (*Spartina pectinata*). Some midgrasses such as western wheatgrass (*Pascopyrum smithii*), meadow dropseed (*Sporobolus compositus*), (and alkali sacaton in areas slightly saline) are common but not nearly as productive as the tallgrasses. The forb component includes maximilian sunflower (*Helianthus maximiliani*), tall liatris (*Liatris aspera*), Baldwin ironweed (Veronia baldwinii), cardinal flower (*Lobelia cardinalis*), goldenrod (Solidago spp.), bluebells (Eustoma russellianum), and primrose species (Oenothera spp.). Grasslikes include sedges (Carex spp.), rushes (Juncus spp.) and occasional cattails (Typha spp.). Shrubs include willow (Salix spp.), baccharis (Baccharis spp.), indigobush (Baptisia bushii) and occasionally dogwood (Cornus spp.) and coralberry (Cocculus carolina). Trees are generally cottonwood (Populus spp.), elm (Ulmus spp.), hackberry (Celtis spp.), and occasionally western soapberry (*Sapindus saponaria*).

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	3000	4500	5700
Forb	200	350	400
Tree	200	300	400
Shrub/Vine	200	250	300
Microbiotic Crusts	10	15	20
Total	**3610**	**5415**	**6820**

Figure 11. Plant community growth curve (percent production by month). TX1512, HCPC - Warm Season Natives. "Historic Climax Plant Community with warm season natives, scattered forbs and woody species.".

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	4	7	19	23	17	8	12	5	2	1

Community 1.2
Mid/Tallgrass Community

Figure 12. 1.2 Mid/Tallgrasses Community

This plant community shows a bottomland dominated by alkali sacaton with a few other midgrasses, and a few tallgrass species. Salt cedar is shown in background and is a frequent invader in certain localities. If the soil and/or water is slightly alkaline, then alkali sacaton is often more prevalent.

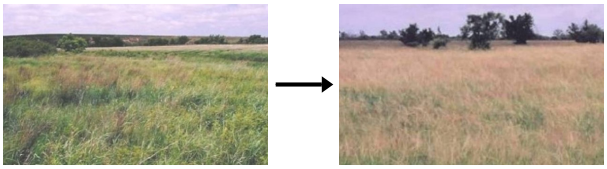
Table 7. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	2400	3000	4000
Shrub/Vine	50	100	250
Forb	100	150	170
Microbiotic Crusts	0	5	5
Tree	0	0	0
Total	**2550**	**3255**	**4425**

Figure 14. Plant community growth curve (percent production by month). TX1513, Warm season tall and midgrasses. "It is a mixture of mid and tall grasses with several short grass species present. It has a variety of forbs, and a few woody shrubs. The major grass species are little bluestem, sideoats grama, Indiangrass, and sand bluestem. ".

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	6	9	22	25	12	6	11	4	2	1

Pathway 1.1A
Community 1.1 to 1.2



Tallgrass Community **Mid/Tallgrass Community**

With heavy continuous grazing, the Tallgrass community can be easily shifted to the Mid/Tallgrass Community.

Pathway 1.2A
Community 1.2 to 1.1

Mid/Tallgrass Community Tallgrass Community

With the implementation of the prescribed grazing conservation practice, the Mid/Tallgrass Community can be shifted back to the Tallgrass Community.

Conservation practices

Prescribed Grazing

State 2
Midgrass/Forb State

This plant community shows a bottomland dominated by Alkali sacaton with a few other midgrasses, and a few tallgrass species. Salt cedar is shown in background and is a frequent invader in certain localities. If the soil and/or water is slightly alkaline, then alkali sacaton is often more prevalent.

Dominant plant species

- tamarisk (*Tamarix*), tree
- Russian olive (*Elaeagnus angustifolia*), tree
- alkali sacaton (*Sporobolus airoides*), grass

Community 2.1
Midgrasses with Forbs Community

This plant community shows a bottomland dominated by Alkali sacaton with a few other midgrasses, and a few tallgrass species. Salt cedar is shown in background and is a frequent invader in certain localities. If the soil and/or water is slightly alkaline, then alkali sacaton is often more prevalent.

Table 8. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1400	2200	2500
Shrub/Vine	240	300	450
Forb	100	200	260
Tree	100	150	200
Microbiotic Crusts	0	10	10
Total	**1840**	**2860**	**3420**

Figure 16. Plant community growth curve (percent production by month). TX1531, Midgrasses/Forbs Community. Midgrasses and forbs dominate the community..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	10	25	23	12	8	8	6	3	1

State 3
Midgrass/Shrub State

The Midgrass/Forb State has departed significantly from the Tallgrass Grassland State. The taller growing grass species have decreased in abundance, being replaced by midgrasses and by common bermudagrass. There has been a significant increase in invasive shrubs with willow baccharis being the dominant species. The site has been

heavily grazed during spring and summer by cattle for many years.

Dominant plant species

- willow baccharis (*Baccharis salicina*), shrub
- buffalograss (*Bouteloua dactyloides*), grass

Community 3.1
Midgrasses with Shrubs Community

This plant community has departed significantly from the potential for the site. The taller growing grass species have decreased in abundance, being replaced by midgrasses and by common bermudagrass (*Cynodon dactylon*). There has been a significant increase in invasive shrubs with willow baccharis being the dominant species. Russian olive has also invaded the site. The site has been heavily grazed during spring and summer by cattle for many years. With control of the woody plants and prescribed grazing, the site will improve ecologically. Once common bermudagrass has gained a foothold, it is persistent.

Transition T1A
State 1 to 2

With heavy continuous grazing and an increase in salinity, the Tallgrass Grassland State will transition into the Midgrass/Forb State.

Transition T1B
State 1 to 3

With heavy continuous grazing and no fires, the Tallgrass Grassland State will transition into the Midgrass/Shrub State.

Restoration pathway R3A
State 3 to 1

With the implementation of conservation practices including Prescribed Grazing, Brush Management, and Prescribed Burning, the Midgrass/Shrub State can be restored to the Tallgrass Grassland State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Tallgrasses**			2320–2850	
	big bluestem	ANGE	*Andropogon gerardii*	0–715	–
	switchgrass	PAVI2	*Panicum virgatum*	0–715	–
	Indiangrass	SONU2	*Sorghastrum nutans*	0–715	–
	prairie cordgrass	SPPE	*Spartina pectinata*	0–715	–
	eastern gamagrass	TRDA3	*Tripsacum dactyloides*	0–715	–
2	**Cool-season grasses**			360–500	
	Canada wildrye	ELCA4	*Elymus canadensis*	0–170	–

	Canada wildrye	ELCA4	*Elymus canadensis*	0–170	–
	western wheatgrass	PASM	*Pascopyrum smithii*	0–170	–
	Texas bluegrass	POAR	*Poa arachnifera*	0–170	–
3	**Mid/Shortgrasses**			400–500	
	saltgrass	DISP	*Distichlis spicata*	0–125	–
	foxtail barley	HOJU	*Hordeum jubatum*	0–125	–
	marsh muhly	MURA	*Muhlenbergia racemosa*	0–125	–
	Carolina canarygrass	PHCA6	*Phalaris caroliniana*	0–125	–
	annual rabbitsfoot grass	POMO5	*Polypogon monspeliensis*	0–125	–
	alkali sacaton	SPAI	*Sporobolus airoides*	0–125	–
	composite dropseed	SPCOC2	*Sporobolus compositus var. compositus*	0–125	–
4	**Cool-season grass**			220–300	
	sedge	CAREX	*Carex*	220–300	–
Forb					
5	**Forbs**			350–480	
	Forb, annual	2FA	*Forb, annual*	0–120	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–120	–
	great ragweed	AMTR	*Ambrosia trifida*	0–120	–
	aster	ASTER	*Aster*	0–120	–
	whitemouth dayflower	COER	*Commelina erecta*	0–120	–
	prairie gentian	EUSTO	*Eustoma*	0–120	–
	American licorice	GLLE3	*Glycyrrhiza lepidota*	0–120	–
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	0–120	–
	annual marsh elder	IVAN2	*Iva annua*	0–120	–
	prairie blazing star	LIPY	*Liatris pycnostachya*	0–120	–
	cardinalflower	LOCA2	*Lobelia cardinalis*	0–120	–
	evening primrose	OENOT	*Oenothera*	0–120	–
	turkey tangle fogfruit	PHNO2	*Phyla nodiflora*	0–120	–
	pitcher sage	SAAZG	*Salvia azurea var. grandiflora*	0–120	–
	Missouri goldenrod	SOMI2	*Solidago missouriensis*	0–120	–
	prairie spiderwort	TROC	*Tradescantia occidentalis*	0–120	–
	Baldwin's ironweed	VEBA	*Vernonia baldwinii*	0–120	–
	hoary verbena	VEST	*Verbena stricta*	0–120	–
Shrub/Vine					
6	**Shrubs**			300–450	
	false indigo bush	AMFR	*Amorpha fruticosa*	0–110	–
	saltwater false willow	BAAN	*Baccharis angustifolia*	0–110	–
	common buttonbush	CEOC2	*Cephalanthus occidentalis*	0–110	–
	roughleaf dogwood	CODR	*Cornus drummondii*	0–110	–
Tree					
7	**Trees**			200–400	
	hackberry	CELTI	*Celtis*	0–100	–
	little walnut	JUMI	*Juglans microcarpa*	0–100	–

	eastern cottonwood	PODE3	*Populus deltoides*	0–100	–
	black willow	SANI	*Salix nigra*	0–100	–
	American elm	ULAM	*Ulmus americana*	0–100	–

Animal community

Native animals that occupy this site include bob-white quail, white-tailed deer, turkey, squirrel, various small mammals and grassland birds. The site provides roosting trees for turkey and cover and nesting habitat for both turkey and quail. Deer frequent the site for screening cover and escape cover. Many white-tailed deer fawns are observed in the tallgrass cover in the spring. Many species of small mammals find this site ideal habitat. Predators such as bobcats are often seen also.

Hydrological functions

This site is prone to flood at least occasionally. The high water table enables growth of lush vegetation. Wetland characteristics often prevail and the site acts as a filter for overland flow. Evaporation is minimized by tall and dense plant growth that shades the soil surface. The site contributes to the stability of the overall riparian system that occurs along major streams.

Recreational uses

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

Wood products

Several species of trees are found on this site but there is seldom any harvest for wood products.

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.

Inventory Data References (documents) :
NRCS FOTG – Section II - Range Site Descriptions
NRCS – NRI 417 data
NRCS Clipping Data summaries over a 20 year period

Other references

J.R. Bell, RMS, NRCS, Amarillo, Texas (retired)
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

Bryan Christensen, 9/12/2023

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:** None to slight.

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2. **Presence of water flow patterns:** Well defined water flow patterns.

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3. **Number and height of erosional pedestals or terracettes:** Common due to concentrated water flow.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-15% along banks, up to 50% in channel areas.

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):** Frequent and extensive during heavy rainfall events.

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

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Silty clay loam; firm surface; high SOM.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Extensive basal cover; density with small interspaces should make rainfall impact minimal. This site has moderately permeable soil, runoff is slow, and available water holding capacity is medium.

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: Cool-season midgrasses >

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

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Mortality and decadence is moderate to high herbaceous vegetative cover.

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):** 3,600 to 6,800 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:** Willow baccharis, salt cedar and Russian olive can be invasive.

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.