

## Ecological site R080BY153TX Loamy Sand 26-33" PZ

Last updated: 9/19/2023  
Accessed: 05/02/2024

### 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.

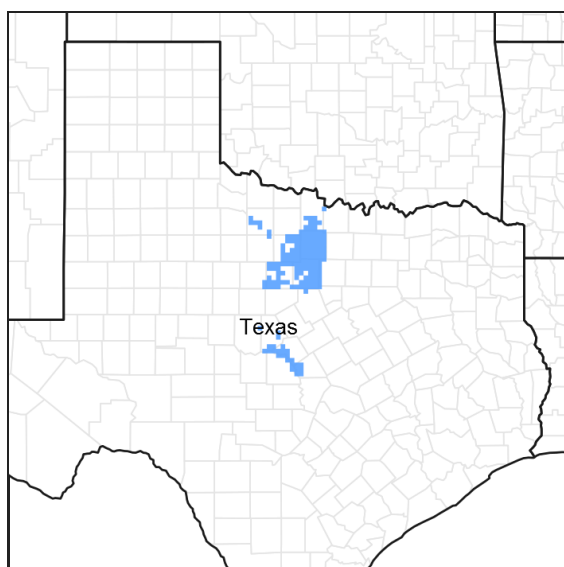


Figure 1. Mapped extent

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): 080B—Texas North-Central Prairies

MLRA 80B consists of gently rolling, dissected plains with very steep hillsides and sideslopes and narrow flood plains associated with small streams. Loamy and clayey soils range from very shallow to deep and developed in sandstones, shales, and limestones of Pennsylvanian age.

### 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 over deep non calcareous loamy sand soils on uplands. The reference vegetation includes native perennial tallgrasses with numerous forbs and scattered oaks. Woody canopy cover is typically under thirty percent under reference conditions. Without periodic fire or brush management, woody species may increase and dominate the site.

## Associated sites

R080BY158TX	<b>SANDY 26-33" PZ</b> These sites frequently occur adjacent to each other or may be intermingled in the same landscape position. Deep sandy soils.
R080BY159TX	<b>Sandy Loam 26-33" PZ</b> These sites frequently occur adjacent to each other or may be intermingled in the same landscape position. Sandy loam soils.

## Similar sites

R080BY159TX	<b>Sandy Loam 26-33" PZ</b> Similar species, greater proportion of tallgrasses, fewer trees. Slightly more production potential.
R080BY158TX	<b>SANDY 26-33" PZ</b> Similar species, lower proportions of tallgrasses and forbs. Greater proportion of midgrasses. Somewhat lower production potential.

Table 1. Dominant plant species

Tree	(1) <i>Quercus stellata</i> (2) <i>Quercus marilandica</i>
Shrub	Not specified
Herbaceous	(1) <i>Sorghastrum nutans</i> (2) <i>Andropogon gerardii</i>

## Physiographic features

This site occurs on linear to concave base slopes and interfluvies of dip slopes and on treads of stream terraces in the Texas North-Central Prairies. Slopes are typically less than percent.

Table 2. Representative physiographic features

Landforms	(1) Hills > Ridge (2) Hills > Dip slope (3) Alluvial plain > Stream terrace
Runoff class	Very low to medium
Elevation	229–732 m
Slope	0–5%
Aspect	Aspect is not a significant factor

## Climatic features

The climate is subtropical subhumid and is characterized by hot humid summers and relatively mild winters. Tropical maritime air controls the climate during spring, summer and fall. In winter and early spring, frequent surges of polar Canadian air cause sudden drops in temperatures and add considerable variety to the daily weather. The average first frost generally occurs about November 5 and the last freeze of the season usually occurs about March 19. The average frost free period ranges from 215 days in the northern counties, to 240 days in the south.

The average relative humidity in mid-afternoon is about 60 percent in the summer months. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 75 percent of the time possible during the summer and 50 percent in winter. The prevailing wind direction is from the southwest and highest windspeeds occur during the spring months.

Approximately 75% of annual rainfall occurs between April 1 and October 31. Rainfall during the months of April through September typically occurs during thunderstorms which tend to be intense and brief, resulting in large amounts of rain in a short time. The wettest months of the year are May, June, September, and October. The driest

months during the growing season are July and August. The winter months of November, December, January, and February are the driest months overall.

Average annual precipitation for the entire MLRA is approximately 28 inches. There is a noticeable difference in the average annual precipitation in the northern counties in comparison to the southern and western counties of this Major Land Resource Area. Jack, Clay, Young, and Palo Pinto Counties all have an average annual precipitation of more than 31 inches. Stephens, Eastland, McCulloch, and San Saba Counties all have an average annual precipitation of less than 28 inches.

Winters tend to be mild, with occasional periods of very cold temperatures which can be accompanied by strong northerly winds and freezing precipitation. Snow is infrequent and significant accumulations are rare. These periods of very cold weather are generally short-lived. Summers tend to be hot and dry. Drought conditions are common during most summers. Air temperatures of more than 95°F are common from mid-June through September. In the northern counties nearest to the Red River, temperatures are generally slightly cooler during winter months and slightly warmer during summer months than in the other counties in the North Central Prairie.

**Table 3. Representative climatic features**

Frost-free period (characteristic range)	184-200 days
Freeze-free period (characteristic range)	211-225 days
Precipitation total (characteristic range)	762-813 mm
Frost-free period (actual range)	183-204 days
Freeze-free period (actual range)	210-226 days
Precipitation total (actual range)	737-838 mm
Frost-free period (average)	193 days
Freeze-free period (average)	217 days
Precipitation total (average)	787 mm

### **Climate stations used**

- (1) SAN SABA 7NW [USC00417994], Richland Springs, TX
- (2) BROWNWOOD 2ENE [USC00411138], Early, TX
- (3) EASTLAND [USC00412715], Eastland, TX
- (4) MINERAL WELLS AP [USW00093985], Millsap, TX
- (5) BRECKENRIDGE [USC00411042], Breckenridge, TX
- (6) GRAHAM [USC00413668], Graham, TX
- (7) JACKSBORO [USC00414517], Jacksboro, TX

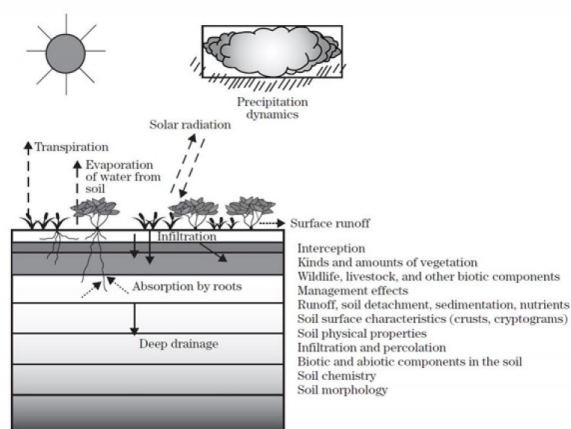
### **Influencing water features**

These sites may receive some runoff from other sites but also shed some water via overland flow. However, the presence of good ground cover and deep rooted grasses can help facilitate water infiltration into the soil. These sites are not associated with wetlands.

### **Wetland description**

NA

**Figure 7-1** The hydrologic cycle with factors that affect hydrologic processes



**Figure 8.**

## Soil features

Representative soil components for this ecological site include: Decordova, Newcastle, Vashti

The site is characterized by moderately deep to very deep loamy sand soils with a high infiltration rate.

**Table 4. Representative soil features**

Parent material	(1) Residuum—sandstone (2) Alluvium—sandstone (3) Residuum—claystone (4) Alluvium—claystone
Surface texture	(1) Loamy fine sand (2) Stony loamy fine sand
Drainage class	Moderately well drained to well drained
Permeability class	Slow to moderately rapid
Soil depth	51 cm
Surface fragment cover ≤3"	0–2%
Surface fragment cover >3"	0–2%
Available water capacity (0-101.6cm)	10.16–17.78 cm
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5.6–7.3
Subsurface fragment volume ≤3" (Depth not specified)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0–2%

## Ecological dynamics

The reference plant community for the Loamy Sand ecological site is a tallgrass/midgrass oak savanna. Evidence of the historic vegetation can be found in the journals and records of explorers, military expeditions, and boundary survey teams.

Climate is a major factor influencing vegetation on the site. Long-term droughts lasting multiple years or growing seasons are infrequent, but when they do occur, they can have a negative impact on the vegetation. If abusive grazing occurs during or immediately following the drought period, the results can be devastating. The effects of erratic seasonal moisture and short-term dry spells lasting a few months are not as severe as those caused by long-term droughts. However, the lower the ecological status of the site, the greater the negative impact will be during drought periods regardless of duration.

Fire was an important part of the ecosystem. Most ecosystems in the North Central Prairie developed in a 4 to 6 year regime of recurring fires. Many of these fires resulted from lightning strikes during thunderstorms. Native Americans frequently set fires to manipulate the movement of bison and other animals as well as a defensive or offensive technique when dealing with their enemies. These historic fires were usually severe because of the amount of grass fuel available to carry the fire. The intensity of fires kept shrubs and sapling trees suppressed and allowed grasses and forbs to flourish. Tallgrass species are fire tolerant and are enhanced by periodic burning. Forbs usually increase for a year or two following these fires before the grasses become dominant again.

Prior to settlement, this site was subject to periodic grazing and browsing by vast herds of bison, wild cattle, wild horses, and deer. At times these grazing and browsing episodes were intense and severe, but periods of heavy use were followed by long periods of non-use as the herds migrated to fresh grazing areas before returning to previously grazed areas. The grazed areas had an opportunity to rest, regrow, regain vigor, and reproduce prior to the next grazing event. Intervals between grazing periods were frequently influenced by the amount of time that had elapsed since the last fire on the area.

As the region was settled, fire was reduced or eliminated and grasslands were fenced off to control movement and facilitate grazing by domestic livestock. As a result of abusive grazing or lack of grazing and/or the elimination of fire, in association with extreme climatic events, the tallgrass plant community has been eliminated or significantly altered on most Loamy Sand sites.

Lack of fire allows herbaceous vegetation to become senescent and may eventually lead to the loss of the most desirable species. The density and canopy of oaks, elms, shrubs, and greenbriar increase significantly in the absence of fire. Seedlings of non-native brush species and invasive weeds may encroach on the site from adjacent sites

Further deterioration leads to the loss of the perennial warm-season midgrass and forb plant community and an increase in short grasses, annuals, and bare ground. This provides the opportunity for woody species such as mesquite and juniper to encroach from adjacent sites.

Selective individual removal of unwanted trees and shrubs is relatively easy and more practical when brush plants initially appear on the site. The increase of brush can be fairly rapid and the plants per acre will soon become too numerous for individual control to be feasible. Once woody plants become mature or develop into dense stands, control is expensive, uneconomical, impractical, and difficult to achieve. Brush management is most successful using a systems approach. Initial treatment by mechanical methods can be followed by using approved herbicides, and using prescribed fire as a maintenance technique. Prescribed grazing with a reasonable stocking rate can sustain the grass species composition and production at a near reference community level.

Changes in plant communities and vegetation states on the Loamy Sand site are result of the combined influences of natural events (rainfall, temperature, droughts, etc.) and the accompanying management systems implemented on the area (prescribed fire, grazing management, and brush management).

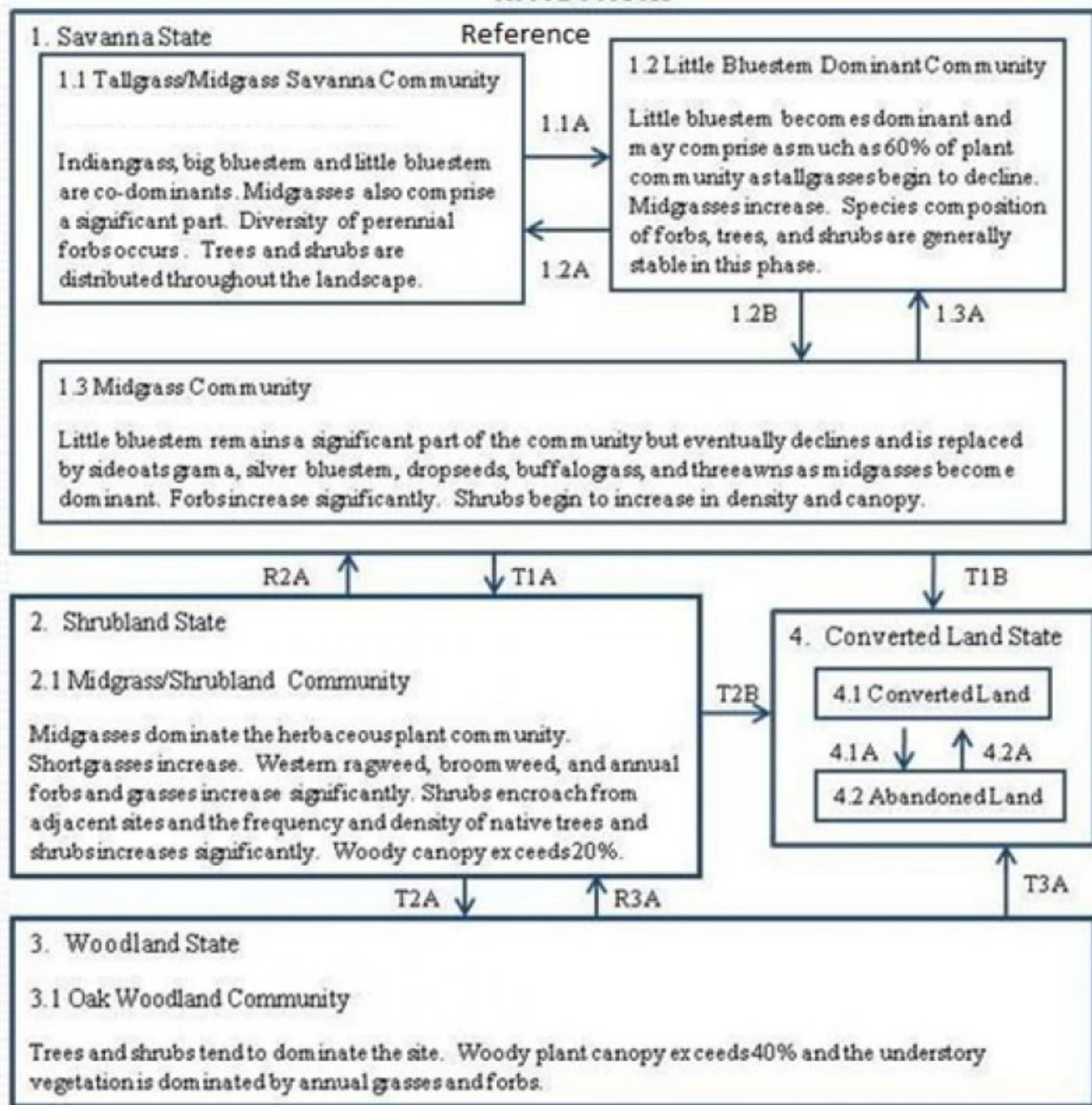
Rangeland Health Reference Worksheets have been posted for this site on the Texas NRCS website ([www.tx.nrcs.usda.gov](http://www.tx.nrcs.usda.gov)) in Section II of the eFOTG under (F) Ecological Site Descriptions.

#### State and Transitional Pathways:

The State and Transition Diagram which follows provides information on some of the most typical pathways that the vegetation on this site can follow as the result of natural events, management inputs, and application of conservation treatments. There may be other plant communities that can exist on this site under certain conditions. Consultation with local experts and professionals is recommended prior to application of practices or management strategies in order to ensure that specific objectives will be met.

## State and transition model

Loamy Sand 26-33" PZ  
R080BY153TX



### Legend

- 1.1A – Uncontrolled Grazing, No Fire
- 1.2A – Prescribed Grazing, Prescribed Burning
- 1.2B – Heavy Continuous Grazing, No Fire
- 1.3A – Prescribed Grazing, Prescribed Burning
- T1A – Abusive Grazing, No Fire, No Brush Management
- R2A – Prescribed Grazing, Prescribed Burning, Brush Management, Seedbed Preparation, Range Planting
- T2A – Abusive Grazing, No Fire, No Brush Management
- R3A – Prescribed Grazing, Prescribed Burning, Brush Management, Seedbed Preparation, Range Planting
- T1B – Seedbed Preparation, Range or Pasture Planting
- T2B – Brush Management, Seedbed Preparation, Range or Pasture Planting
- T3A – Land Clearing, Seedbed Preparation, Range, Pasture, or Tree Planting
- 4.1A – Abusive Grazing, No Fire, No Brush Management, Little Land, No Pasture, Cattle, or Horse Management



## State 1

### Savanna State - Reference

The reference plant community for the Loamy Sand ecological site is a Tallgrass/Midgrass Savanna Community. In reference conditions, the site is dominated by tallgrasses. Midgrasses are also prominent on this site. An abundant variety of perennial forbs occur on this site. Trees, shrubs, and vines are a critical component of the plant community. Annual production ranges from 2500 to 5500 pounds per acre. The Little Bluestem Dominant Community occurs when tallgrasses decline. Little bluestem is an opportunistic species on this site. In the absence of other tallgrasses, little bluestem becomes the dominant species and may eventually comprise as much as 60% of the plant community. Some midgrass species may increase on the site. The tree, shrub, and forb composition remain relatively stable in this stage. Annual production ranges from 2200 to 5000 pounds per acre. The Midgrass Community is noted by a drastic shift in the herbaceous plant community. Little bluestem remains a significant component, but midgrasses and shortgrasses become dominant. Remnant populations of tallgrasses still occur in protected areas. Forbs increase, and invasive shrubs begin to encroach from adjacent sites. The annual production ranges from 2000 to 3400 pounds per acre.

#### Dominant plant species

- post oak (*Quercus stellata*), tree
- Indiangrass (*Sorghastrum nutans*), grass

## Community 1.1

### Tall/Midgrass Savanna Community



Figure 9. 1.1 Tall/Midgrass Savanna Community

The reference plant community for the Loamy Sand ecological site is a tallgrass/midgrass oak savanna. In this plant community, the site is dominated by tallgrasses including Indiangrass, big bluestem, and little bluestem which are co-dominants. Sideoats grama, dropseeds, sand lovegrass, silver bluestem, Arizona cottontop, blue grama, and Texas bluegrass are the most prominent midgrasses. An abundant variety of perennial forbs occur on this site. The most common forbs are western ragweed, Engelmann's daisy, Maximilian sunflower, gayfeather, bundleflower, sagewort, partridgepea, and sensitivebriar. Trees, shrubs, and vines are a critical component of the plant community. The Loamy Sand site is a savanna. Post oak, blackjack oak, several species of elms, hackberry, plums, and bumelia are distributed uniformly throughout the site. Annual production ranges from 2500 to 5500 pounds per acre.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2242	3587	4932
Forb	336	448	560
Shrub/Vine	112	224	336
Tree	112	224	336
<b>Total</b>	<b>2802</b>	<b>4483</b>	<b>6164</b>

Figure 11. Plant community growth curve (percent production by month). TX3014, Tall and mid-grass Savannah, 10 % canopy. Tall and mid grass savannah with some forbs and woody species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	2	2	10	20	24	10	5	10	10	3	2

## Community 1.2

### Little Bluestem Dominant Community



Figure 12. 1.2 Little Bluestem Dominant Community

Uncontrolled grazing and the absence of fire eventually will lead to the decline of Indiangrass, big bluestem, and switchgrass. Little bluestem is an opportunistic species on this site. In the absence of other tallgrasses, little bluestem becomes the dominant species and may eventually comprise as much as 60% of the plant community. Some midgrass species such as sideoats grama, silver bluestem, dropseeds, and bristlegrass increase on the site. The tree, shrub, and forb composition remain relatively stable in this stage. Annual production ranges from 2200 to 5000 pounds per acre.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1905	3138	4371
Forb	336	504	673
Shrub/Vine	112	196	280
Tree	112	196	280
<b>Total</b>	<b>2465</b>	<b>4034</b>	<b>5604</b>

Figure 14. Plant community growth curve (percent production by month). TX3014, Tall and mid-grass Savannah, 10 % canopy. Tall and mid grass savannah with some forbs and woody species..



Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	2	2	10	20	24	10	5	10	10	3	2

### Community 1.3 Midgrass Community



Figure 15. 1.3 Midgrass Community

Heavy, continuous grazing and lack of fire result over an extended period of time result in a drastic shift in the herbaceous plant community. Little bluestem remains a significant component, but midgrasses and shortgrasses such as sideoats grama, silver bluestem, dropseeds, hairy grama, buffalograss, and threeawns become dominant. Remnant populations of tallgrasses still occur in protected areas. Western ragweed, gayfeather, and basketflower increase, and invasive shrubs begin to encroach from adjacent sites. The annual production ranges from 2000 to 3400 pounds per acre.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1345	1681	2018
Forb	448	673	897
Tree	336	448	560
Shrub/Vine	112	224	336
Total	2241	3026	3811

Figure 17. Plant community growth curve (percent production by month). TX3020, Midgrass Savannah, 10% canopy. Midgrass savannah with 10 percent canopy cover. Continuous overgrazing led to the decline of tall grasses and the rise of the midgrass species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2	2	2	10	20	24	10	5	10	10	3	2

### Pathway 1.1A Community 1.1 to 1.2



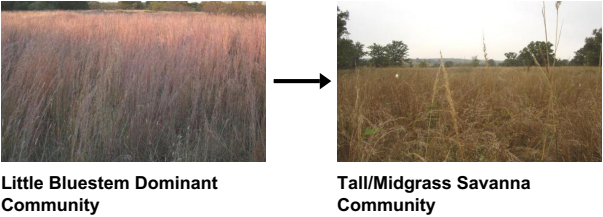
Tall/Midgrass Savanna  
Community



Little Bluestem Dominant  
Community

With uncontrolled grazing pressure and no fires, the Tall/Midgrass Savanna Community will shift to the Little Bluestem Dominant Community.

**Pathway 1.2A**  
**Community 1.2 to 1.1**

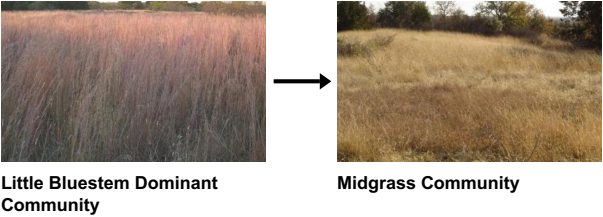


With Prescribed Grazing and Prescribed Burning conservation practices, the Little Bluestem Dominant Community can be shifted back to the Tallgrass/Midgrass Savanna Community.

**Conservation practices**

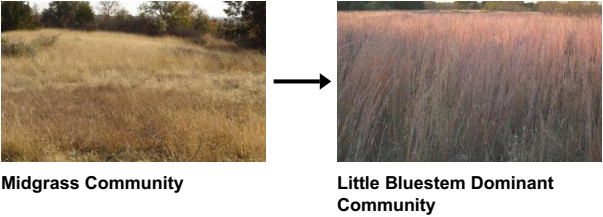
Prescribed Burning
Prescribed Grazing

**Pathway 1.2B**  
**Community 1.2 to 1.3**



With heavy continuous grazing pressure and no fires, the Little Bluestem Dominant Community will shift to the Midgrass Savanna Community.

**Pathway 1.3A**  
**Community 1.3 to 1.2**



Prescribed Grazing and Prescribed Burning are several conservation practices that are required in order to shift the Midgrass Savanna Community back to the Little Bluestem Dominant Community.

**Conservation practices**

Prescribed Burning
Prescribed Grazing

**State 2**  
**Shrubland State**

In the Midgrass/Shrubland Community, the tallgrasses are almost completely eliminated and sideoats grama is severely reduced in this state. Midgrasses are the dominant grasses. Forbs increases significantly and broomweed

invades the site. Trees and shrubs create a midstory canopy below the overstory of oaks, elms, and other trees. Total canopy exceeds 20%. Total annual production ranges from 1000 to 2000 pounds per acre.

**Dominant plant species**

- post oak (*Quercus stellata*), tree
- blackjack oak (*Quercus marilandica*), tree
- elm (*Ulmus*), tree
- sideoats grama (*Bouteloua curtipendula*), grass

**Community 2.1  
Midgrass/Shrubland Community**



Figure 18. 2.1 Midgrass/Shrubland Community

Long-term abusive grazing or periodic heavy grazing accompanied by prolonged drought, and elimination of fire eventually result in the site being invaded by brush species encroaching from adjacent sites such as mesquite, pricklyash, lotebush, yucca, pricklypear, tasajillo, and greenbriar. Canopy cover exceeds 20%. Broomweed, western ragweed, and annual forbs are abundant. Dropseeds, silver bluestem, buffalograss, curlymesquite, and threeawns are the dominant grasses. Annual production ranges from 1000 to 2000 pounds per acre.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Forb	224	448	673
Grass/Grasslike	336	448	560
Tree	336	448	560
Shrub/Vine	224	336	448
Total	1120	1680	2241

Figure 20. Plant community growth curve (percent production by month).  
TX3030, Mid/Shortgrass with Mesquite - Buffalograss . Mid and Short Grass  
with Mesquite; Buffalograss, Texas Wintergrass, and Meadow Dropseed..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	5	5	15	15	15	5	5	10	10	5	5

**State 3  
Woodland State**

The Oak Woodland Community has become a dense, thicketed woodland. The Loamy Sand site will develop a dense overstory of oaks, elms, hackberry, and other trees. Bumelia, pricklyash, sumacs, lotebush mesquite, and other shrubs form a dense midstory, and greenbriar can create an impenetrable thicket. Annual production ranges

from 1000 to 2000 pounds per acre.

Dominant plant species

- oak (*Quercus*), tree
- elm (*Ulmus*), tree
- hackberry (*Celtis*), tree
- saw greenbrier (*Smilax bona-nox*), shrub
- sumac (*Rhus*), shrub
- Texas wintergrass (*Nassella leucotricha*), grass

Community 3.1  
Oak Woodland Community



Figure 21. 3.1 Oak Woodland Community

Long-term abusive grazing or heavy continuous grazing accompanied by drought and lack of fire can cause this site to become a dense, thicketed woodland. The Loamy Sand site will develop a dense overstory of oaks, elms, hackberry, and other trees encompassing 40+% woody canopy cover. Bumelia, pricklyash, sumacs, lotebush mesquite, and other shrubs form a dense midstory, and greenbrier can create an impenetrable thicket. Drastic and expensive treatment methods are required to return this land to a productive state for most uses. Annual production ranges from 1000 to 2000 pounds per acre.

Table 9. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	448	560	673
Tree	336	448	560
Forb	168	336	504
Grass/Grasslike	168	336	504
Total	1120	1680	2241

Figure 23. Plant community growth curve (percent production by month). TX3048, Post Oak Woodland Community. Post oak, elm, and hackberry dominate the overstory. Bumelia, pricklyash, sumac and greenbrier dominate the understory..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	2	20	30	20	5	5	8	6	1	1

State 4  
Converted Land State

Hundreds of thousands of acres have been plowed up and converted to cropland, pastureland, or hayland. This



community is known as the Converted Land Community. Wheat is the primary annual crop. Bermudagrass is the primary introduced pasture species used in this area. Abandoned croplands and reseeded areas tend to revert back to a more natural state through the process of secondary succession. This is a very slow process that takes decades or centuries to evolve, dependent on the status of the area at the time it is abandoned. The first plants to establish are “pioneer plants” (annual forbs and grasses followed by early successional shortgrasses and midgrasses). This community is known as the Abandoned Land Community.

**Dominant plant species**

- Bermudagrass (*Cynodon dactylon*), grass

**Community 4.1  
Converted Land Community**



Figure 24. 4.1 Converted Land Community - Pastureland

The Loamy Sand site is one of the most frequently converted sites because of its relatively level topography and deep soils which are easy to work. Hundreds of thousands of acres have been plowed up and converted to cropland, pastureland, reseeded rangeland, or orchards. The soils are not inherently fertile and do not have a good soil-moisture-plant relationship, so they require high levels of fertility, aggressive weed control, and adequate moisture in order to produce to their potential. If managed properly, these soils can be very productive. Small grains are the most commonly planted crops on these soils. Bermudagrass is the most frequently planted introduced pasture species. Weeping lovegrass was seeded on thousands of acres of this site in years past, but is rarely used in seedings today. Some areas which were previously cultivated or planted to introduced forage species have been seeded back to monocultures or mixtures of adapted native grasses to provide a more sustainable and diverse habitat for wildlife and livestock. Indiangrass, switchgrass, big bluestem, and sideoats grama are the species that are used most frequently. In some localized areas, peach and pecan orchards have been established on this site. Refer to Forage Suitability Group Descriptions and other guidance in the Texas NRCS website ([www.tx.nrcs.usda.gov](http://www.tx.nrcs.usda.gov)) and in the NRCS Electronic Field Office Technical Guide (eFOTG) for species adaptability, production guides, and management recommendations. In the highest state of production following conversion, the trees, shrubs and forbs have been severely reduced or eliminated from the site. The more trees, shrubs, and forbs that occur on a converted site, the lower the overall production would be. The annual production figures below reflect this change.

Table 10. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2578	4595	6389
Forb	448	392	336
Shrub/Vine	112	56	—
Total	3138	5043	6725

Figure 26. Plant community growth curve (percent production by month).  
TX3002, Cropland - Small Grains. Planted into small grains such as wheat or

oats..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	16	21	19	5	0	0	0	0	8	18	8

**Figure 27. Plant community growth curve (percent production by month). TX3037, Converted Land Community. Planted to monocultures of introduced species, or monocultures or mixtures of commercially available native tallgrasses..**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	3	5	14	23	20	5	4	12	8	3	2

## Community 4.2 Abandoned Land Community



**Figure 28. 4.2 Abandoned Land Community**

Thousands of acres of loamy sand soils that were previously broken out for cultivation have been abandoned due to drought and/or unstable economic conditions. When cropland fields or pastures are abandoned, the areas attempt to recover through the process of secondary succession. This is a very slow process that takes decades or centuries dependent on the status of the area at the time it is abandoned. The first plants to establish are annual forbs and grasses followed by early successional shortgrasses and midgrasses. If managed properly, some of these abandoned areas may eventually begin to approximate the diversity and complexity of the native ecosystem. Midgrasses and perennial forbs may begin to establish if the area is carefully managed. However, it is highly unlikely that abandoned lands can ever return to reference vegetation within a reasonable period of time.

**Table 11. Annual production by plant type**

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Forb	448	560	673
Grass/Grasslike	336	448	560
Shrub/Vine	112	224	336
<b>Total</b>	<b>896</b>	<b>1232</b>	<b>1569</b>

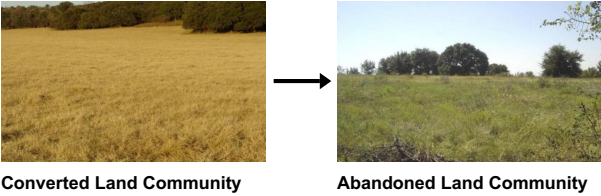
**Figure 30. Plant community growth curve (percent production by month). TX3038, Abandoned Land Community. Abandoned croplands, pasturelands and seeded areas..**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3	4	8	16	18	12	4	4	10	12	6	3

## Pathway 4.1A

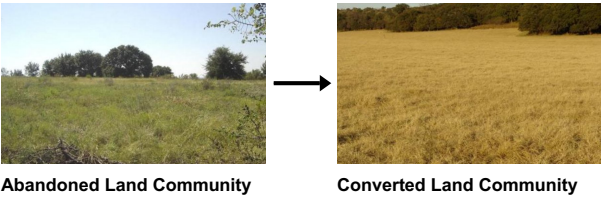


Community 4.1 to 4.2



With abusive grazing, no fires, no brush management, idled land, no pasture/range/orchard/cropland management, the Converted Land Community will shift to the Abandoned Land Community.

Pathway 4.2A  
Community 4.2 to 4.1



With the implementation of various conservation practices such as Prescribed Grazing, Prescribed Burning, Pasture/Crop/Orchard Management, Seedbed Preparation, and Range/Pasture/Tree Planting, the Abandoned Land Community can be shifted back to the Converted Land Community.

Conservation practices

Brush Management
Conservation Crop Rotation
Prescribed Burning
Land Clearing
Prescribed Grazing
Range Planting
Nutrient Management
Integrated Pest Management (IPM)

Transition T1A  
State 1 to 2

Abusive grazing pressure, no fires, and no brush management leads the transition from the Savanna State to the Shrubland State.

Transition T1B  
State 1 to 4

With Seedbed Preparation, Range Planting, Pasture Planting, Crop Cultivation, the Savanna State can transition into the Converted Land State.

Restoration pathway R2A  
State 2 to 1

With Prescribed Grazing, Prescribed Burning, Seedbed Preparation, and Range Planting, the Shrubland State can be restored to the Savanna State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing
Range Planting

## Transition T2A

### State 2 to 3

With Abusive Grazing, No Fires, and No Brush Management, the Shrubland State will shift to the Woodland State.

## Transition T2B

### State 2 to 4

With Brush Management, Seedbed Preparation, Range Planting, Pasture Planting, and Crop Cultivation, the Shrubland State can transition into the Converted Land State.

## Restoration pathway R3A

### State 3 to 2

With Prescribed Grazing, Prescribed Burning, Brush Management, Seedbed Preparation, and Range Planting, the Woodland State can be restored to the Shrubland State.

### Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing
Range Planting

## Transition T3A

### State 3 to 4

With Brush Management, Seedbed Preparation, Range Planting, Pasture Planting, Crop Cultivation and Orchards, the Woodland State can transition into the Converted Land State.

## Additional community tables

Table 12. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Tallgrass</b>			560–1681	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	560–1681	–
2	<b>Tallgrasses</b>			112–1681	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	112–1681	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	0–1681	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	112–1681	–
	purpletop tridens	TRFL2	<i>Tridens flavus</i>	0–560	–
3	<b>Midgrasses</b>			560–1121	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	280–1121	–
	sand lovegrass	ERTR3	<i>Eragrostis trichodes</i>	280–1121	–

	Texas wintergrass	NALE3	<i>Nassella leucotricha</i>	0–280	–
	Texas bluegrass	POAR	<i>Poa arachnifera</i>	0–280	–
	yellow foxtail	SEPUP2	<i>Setaria pumila</i> ssp. <i>pumila</i>	0–280	–
	composite dropseed	SPCOC2	<i>Sporobolus compositus</i> var. <i>compositus</i>	112–280	–
	Drummond's dropseed	SPCOD3	<i>Sporobolus compositus</i> var. <i>drummondii</i>	0–280	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	112–280	–
	silver beardgrass	BOLAT	<i>Bothriochloa laguroides</i> ssp. <i>torreyana</i>	112–280	–
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	0–280	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0–280	–
	plains lovegrass	ERIN	<i>Eragrostis intermedia</i>	0–280	–
	fringed signalgrass	URCI	<i>Urochloa ciliatissima</i>	0–112	–
	thin paspalum	PASE5	<i>Paspalum setaceum</i>	0–112	–
4	<b>Mid/shortgrasses</b>			112–560	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	0–280	–
	Scribner's rosette grass	DIOLS	<i>Dichanthelium oligosanthos</i> var. <i>scribnerianum</i>	0–280	–
	hooded windmill grass	CHCU2	<i>Chloris cucullata</i>	0–280	–
	tumble windmill grass	CHVE2	<i>Chloris verticillata</i>	0–168	–
	fall witchgrass	DICO6	<i>Digitaria cognata</i>	0–168	–
	red lovegrass	ERSEO	<i>Eragrostis secundiflora</i> ssp. <i>oxylepis</i>	0–168	–
	curly-mesquite	HIBE	<i>Hilaria belangeri</i>	0–168	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0–168	–
	purple threeawn	ARPUP6	<i>Aristida purpurea</i> var. <i>purpurea</i>	0–168	–
	Wright's threeawn	ARPUW	<i>Aristida purpurea</i> var. <i>wrightii</i>	0–168	–
	buffalograss	BODA2	<i>Bouteloua dactyloides</i>	0–168	–
<b>Forb</b>					
5	<b>Forbs</b>			280–560	
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0–280	–
	Engelmann's daisy	ENPE4	<i>Engelmannia peristenia</i>	0–280	–
	Maximilian sunflower	HEMA2	<i>Helianthus maximiliani</i>	0–280	–
	partridge pea	CHFA2	<i>Chamaecrista fasciculata</i>	0–112	–
	white sagebrush	ARLUM2	<i>Artemisia ludoviciana</i> ssp. <i>mexicana</i>	0–112	–
	Illinois bundleflower	DEIL	<i>Desmanthus illinoensis</i>	0–112	–
	bractless blazingstar	MENU	<i>Mentzelia nuda</i>	0–56	–
	Nuttall's sensitive-briar	MINU6	<i>Mimosa nuttallii</i>	0–56	–
	yellow puff	NELU2	<i>Neptunia lutea</i>	0–56	–
	evening primrose	OENOT	<i>Oenothera</i>	0–56	–
	groundcherry	PHYSA	<i>Physalis</i>	0–56	–
	scurfpea	PSORA2	<i>Psoraleidium</i>	0–56	–
	pitcher sage	SAAZG	<i>Salvia azurea</i> var. <i>grandiflora</i>	0–56	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	0–56	–

	amberique-bean	STHE9	<i>Strophostyles helvola</i>	0–56	–
	white heath aster	SYERE	<i>Symphyotrichum ericoides</i> var. <i>ericoides</i>	0–56	–
	prairie spiderwort	TROC	<i>Tradescantia occidentalis</i>	0–56	–
	Texas vervain	VEHA	<i>Verbena halei</i>	0–56	–
	purple poppymallow	CAIN2	<i>Callirhoe involucrata</i>	0–56	–
	yellow sundrops	CASE12	<i>Calylophus serrulatus</i>	0–56	–
	bluestem pricklypoppy	ARAL3	<i>Argemone albiflora</i>	0–56	–
	whitemouth dayflower	COER	<i>Commelina erecta</i>	0–56	–
	prairie clover	DALEA	<i>Dalea</i>	0–56	–
	purple prairie clover	DAPU5	<i>Dalea purpurea</i>	0–56	–
	hymenopappus	HYMEN4	<i>Hymenopappus</i>	0–56	–
	lespedeza	LESPE	<i>Lespedeza</i>	0–56	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–56	–
	beeblossom	GAURA	<i>Gaura</i>	0–56	–
<b>Shrub/Vine</b>					
6	<b>Shrubs/Vines</b>			112–336	
	plum	PRUNU	<i>Prunus</i>	0–112	–
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	0–112	–
	gum bully	SILA20	<i>Sideroxylon lanuginosum</i>	0–112	–
	pricklyash	ZANTH	<i>Zanthoxylum</i>	0–112	–
	greenbrier	SMILA2	<i>Smilax</i>	0–56	–
	yucca	YUCCA	<i>Yucca</i>	0–56	–
	catclaw acacia	ACGRG3	<i>Acacia greggii</i> var. <i>greggii</i>	0–56	–
	Christmas cactus	CYLE8	<i>Cylindropuntia leptocaulis</i>	0–56	–
	pricklypear	OPUNT	<i>Opuntia</i>	0–56	–
<b>Tree</b>					
7	<b>Trees</b>			112–336	
	post oak	QUST	<i>Quercus stellata</i>	112–560	–
	American elm	ULAM	<i>Ulmus americana</i>	0–112	–
	sugarberry	CELAL	<i>Celtis laevigata</i> var. <i>laevigata</i>	0–112	–
	netleaf hackberry	CELAR	<i>Celtis laevigata</i> var. <i>reticulata</i>	0–112	–
	honey mesquite	PRGL2	<i>Prosopis glandulosa</i>	0–112	–
	blackjack oak	QUMA3	<i>Quercus marilandica</i>	0–112	–
	ash	FRAXI	<i>Fraxinus</i>	0–56	–
	slippery elm	ULRU	<i>Ulmus rubra</i>	0–56	–
	wingleaf soapberry	SASA4	<i>Sapindus saponaria</i>	0–56	–
	winged elm	ULAL	<i>Ulmus alata</i>	0–56	–

## Animal community

Historically, the Loamy Sand site was inhabited permanently and intermittently by a wide variety of mammals, reptiles, and birds. Several historical references and journals written in the 18th and 19th century by explorers, survey parties, and military expeditions refer to herds of bison, wild cattle, wild horses, and antelope roaming freely across the North Central Prairie and adjacent regions.

Currently, the site is utilized by deer, quail, dove, numerous species of birds, and a variety of small fur-bearing mammals. Animal species and populations fluctuate as the vegetation cycles through temporary phases and different ecological stages.

Livestock grazing should be controlled by implementing grazing management systems that incorporate frequent and timely deferment periods to prevent abusive grazing.

## **Hydrological functions**

When herbaceous vegetation and ground cover are maintained in a healthy and vigorous status, water infiltration into the soil profile is increased significantly, resulting in less runoff. A thick, healthy grass cover also results in improved water quality because it serves as a filter or trap to reduce sediments and pollutants before the water flows offsite.

## **Recreational uses**

These scenic areas offer outdoor activities including photography, shaded picnic areas, bird watching, hiking, camping, horseback riding, and off-road vehicle use. The site offers opportunities for hunting quail, dove, deer, and turkey because of its diverse plant communities, abundance of forbs, and variety of trees and shrubs.

## **Wood products**

Post oak, elms, and hackberry have limited value as fence posts, firewood, specialty products, and crafts.

## **Other products**

None.

## **Other information**

None.

## **Inventory data references**

Vegetation data for this site was obtained from existing Range Site Descriptions, SCS-RANGE -417 Production and Composition Records for Native Grazing Lands, and on-site inventories by the author and local experts including ranchers, natural resource specialists from federal and state agencies, and personnel from cooperating agencies and organizations. A total of 7 SCS-RANGE-417's containing data collected from 3 counties during the period 12/30/1981 to 12/12/1986 were reviewed for this site.

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## **Approval**

Bryan Christensen, 9/19/2023

## **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)	Lem Creswell, Zone RMS, NRCS, Weatherford, Texas
Contact for lead author	817-596-2865
Date	10/22/2007
Approved by	Bryan Christensen
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

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

- 
2. **Presence of water flow patterns:** Deposition or erosion is uncommon during normal rainfall events, but may occur in limited areas during intense rainfall events.

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

- 
4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Expect no more than 10% bare ground scattered randomly throughout the site.

- 
5. **Number of gullies and erosion associated with gullies:** Few rills and very few gullies may occur on sidedrains into perennial and intermittent streams. Gullies and rills should be vegetated and stable.

- 
6. **Extent of wind scoured, blowouts and/or depositional areas:** Uncommon.

- 
7. **Amount of litter movement (describe size and distance expected to travel):** Little or no litter movement or deposition during normal rainfall events.

- 
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface is moderately susceptible to wind erosion in this MLRA.

- 
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** 0-8" thick - weak, fine granular structure. SOM is approximately 1-6%. See Official Series Description for more information.

- 
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The tallgrass/midgrass savanna with abundant forbs, adequate litter, and little bare ground provides for maximum infiltration and negligible runoff.
-

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 >> warm-season midgrasses >

Sub-dominant: Warm-season midgrasses > Trees >

Other: Forbs > Shrubs/Vines > Cool-season grasses

Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Perennial grasses will naturally exhibit a minor amount (less than 5%) of senescence and some mortality every year.
- 

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):** 2000 to 5500 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:** Mesquite, pricklypear, yucca, tasajillo, pricklyash, lotebush, bermudagrass, johnsongrass, King Ranch bluestem, weeping lovegrass, annual broomweed
- 

17. **Perennial plant reproductive capability:** All perennial species should be capable of reproducing every year unless disrupted by extended drought, overgrazing, wildfire, insect damage, or other events occurring immediately prior to, or during the reproductive phase.
-