USDA Natural Resources Conservation Service

Ecological site R077BY700TX
Sandy Bottomland 12-17" PZ

Last updated: 9/11/2023
Accessed: 05/18/2024

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): 077B–Southern High Plains, Northwestern Part

MLRA 77B is characterized by nearly level to gently sloping plains with a minimal number of playa depressions and moderately sloping breaks along drainageways. Loamy and sandy soils are generally deep and occur in a mesic soil temperature regime and ustic soil moisture regime bordering on aridic. Current land use is dominantly rangeland with minor cropland.

Classification relationships

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

Ecological site concept

These sites occur on deep sandy soils on floodplains. The reference vegetation consists of tallgrasses with forbs and scattered shrubs and trees. Abusive grazing practices may lead to a change in species composition and a shift in the plant community. Without periodic fire or other brush management, woody species may expand across the site.

Associated sites

R077BY725TX	**Draw 12-17" PZ** Draw sites are on the same landscape, they generally occur adjacent to and in association with Sandy Bottomland sites. Sandy bottomland sites have a more diverse plant community with higher production.
R077BY009NM	**Gravelly** Gravelly sites can occur adjacent to and in association with Sandy Bottomland sites. Midgrasses dominate. Less production than the Sandy Bottomland site.
R077BY658TX	**Sandy 12-17" PZ** Sandy sites will generally occur adjacent to and in association with Sandy Bottomland sites. Sandy bottomland sites have a more diverse plant community with higher production.
R077BY021TX	**Sandy Loam 12-17" PZ** Sandy loam sites generally occur adjacent to and in association with Sandy Bottomland sites. Midgrasses dominate but some tallgrasses can be found on this site. Less production than the Sandy Bottomland site.

Similar sites

R077AY002TX	**Draw 16-22" PZ** Draw sites have less tall grasses and more midgrass species, with less woody plants than Sandy Bottomland sites. Usually occurs in somewhat similar landscape positions. This site occurs in an area of higher precipitation (16 to 22 inches) therefore production is either similar or slightly higher than the Sandy Bottomland site in MLRA 77B.
R077BY725TX	**Draw 12-17" PZ** Draw sites have less tall grasses and more midgrass species, with less woody plants than Sandy Bottomland sites. Normally the Draw site is a drier site. Usually occurs in somewhat similar landscape positions. Total production and plant diversity higher on the Sandy Bottomland site.
R077EY065TX	**Sandy Bottomland 16-24" PZ** This site has deep to very deep sandy soils lie the Sandy Bottomland site in MLRA 77B. Mean annual temperature is higher (59 to 63 degrees F). Mean annual precipitation is higher (16 to 24 inches). Tallgrasses dominate, but a good mixture of midgrasses can be found on this site. More productive than the Sandy Bottomland site in MLRA 77B.

Table 1. Dominant plant species

Tree	(1) *Populus deltoides*
Shrub	(1) *Rhus trilobata*
Herbaceous	(1) *Panicum virgatum* (2) *Schizachyrium scoparium*

Physiographic features

This Sandy Bottomland site occurs along sandy stream channels and on fluvial terraces along streams and is intermittently flooded. The site developed from alluvial deposits and may exhibit some minor reworking by wind. The slopes are generally level to slightly undulating. There is usually a water table at a fairly shallow depth but the soil is not usually wet to the surface.

Table 2. Representative physiographic features

Landforms	(1) Plateau > Draw (2) Plateau > Ephemeral stream
Runoff class	Negligible
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	None to occasional
Ponding frequency	None
Elevation	1,128–1,707 m

Slope	0–1%
Water table depth	203 cm
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

The climate is semiarid continental. Summers are hot with winters generally being mild. Temperature extremes are common. Humidity is generally low, and short-term droughts are common. Winds speeds average 12 mph and are highest in early spring. The prevailing wind direction is southwest. In the fall and winter, northers are common with severe temperature drops. Cold spells do not generally last more than a few days. Evaporation in summer is high. Open pan evaporation exceeds 6 ft. per year. Most of the precipitation occurs from May to September. Rainfall events often occur as intense showers of relatively short duration. Frequently during the first 15 minutes of a thunderstorm, the rate of rainfall may be 6 to 8 inches per hour. Snowfall average is about 15 inches, but it is not unusual for snowfall to exceed 30 inches every few years. Long-term droughts are likely to occur every 15 to 20 years and may last 4 to 5 years. Mean precipitation is around 17 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 percent that precipitation will fall between 14 inches and 23 inches. Growing season averages 195 days. Average first frost is around October 22, and the last freeze of the season should occur around April 1.

Table 3. Representative climatic features

Frost-free period (characteristic range)	140-145 days
Freeze-free period (characteristic range)	169-170 days
Precipitation total (characteristic range)	432-457 mm
Frost-free period (actual range)	139-147 days
Freeze-free period (actual range)	168-170 days
Precipitation total (actual range)	406-457 mm
Frost-free period (average)	143 days
Freeze-free period (average)	169 days
Precipitation total (average)	432 mm

Climate stations used

- (1) CLAYTON 1 N [USC00291883], Clayton, NM
- (2) DALHART 6 SW [USC00412235], Hartley, TX
- (3) AMISTAD 5 SSW [USC00290377], Amistad, NM
- (4) ROSEBUD 7NW [USC00297585], Mosquero, NM
- (5) MCCARTY RCH [USC00295516], Nara Visa, NM

Influencing water features

This site is adjacent to streams that are occasionally flooded but are not classified as wetlands. There is no predominance of hydrophytic vegetation on the site and the soils are well drained to the surface. There may be a high water table within a few feet of the surface. The presence of a high water table does influence the vegetative makeup of the site.

Wetland description

None.

Soil features

These very deep soils are alluvial and very sandy in texture. Since these are geologically young sediments, there is no horizon development. They are very low in organic matter and low in fertility. They are subject to wind erosion if good cover is not present. Infiltration of moisture is rapid and these soils yield water to plants readily but storage capacity is very low. Depth to water influences the density and the amount of vegetation present. The productive potential of the site is moderate.

Major Soil Taxonomic Units correlated to this site include: Corlena loamy fine sand.

Table 4. Representative soil features

Parent material	(1) Alluvium–igneous, metamorphic and sedimentary rock
Surface texture	(1) Loamy fine sand
Family particle size	(1) Coarse-loamy
Drainage class	Well drained
Permeability class	Rapid
Soil depth	203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	2.54–15.24 cm
Calcium carbonate equivalent (0-101.6cm)	0–5%
Electrical conductivity (0-101.6cm)	0–3 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–4
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (0-101.6cm)	0–9%
Subsurface fragment volume >3" (0-101.6cm)	0%

Ecological dynamics

The soils, topographic location, climate, periodic droughts and fire influenced the stabilization of the reference plant community for this site. This plant community is tallgrass dominant with several midgrass plants, there are also a few shrubs and scattered trees of moderate to tall stature. The site occurs along sandy streambeds usually as a stream terrace, slightly higher on the landscape than the stream channel. Water tables are usually within 2 to 4 feet of the surface and plant roots can easily reach water. The soils consist of layers of sandy alluvium. Since there has been little soil development, the soil is not as strong in its ability to sustain a good cover of vegetation as in more loamy soils. This bottomland site is not as productive as the loamy bottomland site which has had more opportunity for soil development and is higher in fine textured soil particles and organic matter. Occasional severe floods played a major role in the ecological development of the Sandy Bottomland site. Vegetation might be severely damaged in the event of major floods and the rebuilding process might take several years.

Tallgrasses in the Tallgrass Dominant Community (1.1) include sand bluestem (*Andropogon hallii*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*) and Indiangrass (*Sorghastrum nutans*) form a moderate cover on this site. Several midgrasses such as sand dropseed (*Sporobolus cryptandrus*), sand paspalum (*Paspalum distichum*), and sand lovegrass (*Eragrostis trichodes*) were also present. On areas containing small dunes, giant sandreed (*Calamovilfa gigantea*) may be found. In some cases, common reedgrass (*Phragmites australis*) may occur in small aggregations. Common shrubs are skunkbush sumac (*Rhus trilobata*) and sand plum (*Prunus angustifolia*). Cottonwood (Populus deltoids) and willows (*Salix nigra*) occasionally occur where the water

table is high. Indigobush amorpha (*Amorpha fruticosa*) and sand sagebrush (*Artemisia filifolia*) may also be present in lesser amounts. Saltcedar (*Tamarix ramosissima*) has become a major invading woody species and is often found on the site. Willow baccharis (*Baccharis salicina*) and common reedgrass can increase and dominate portions of the site. Forbs such as Illinois bundleflower (Desmanthus illinoinensis), catclaw sensitivebriar (Schrankia uncinata), gaura (*Gaura suffulta*), primrose species (Oenothera spp.), western ragweed (*Ambrosia psilostachya*) and various annual forbs make up about 10% of the vegetative component on a dry matter basis.

This is a very fragile site and can be damaged by overgrazing rather quickly. A good cover of tallgrasses can soon deteriorate if grazing pressure is too great. An excessive amount of animal impact can have an adverse effect on the sandy soils. This site is influenced by changes in the water table as well as by grazing management. Maintaining good vegetative cover on this site makes for better water quality downstream with less sedimentation and increased aquifer recharge. This site is very important for many wildlife species which use the cover adjacent to any water holes for critical habitat needs. Wild turkey often roost in the cottonwood trees along streams. Tallgrasses provide nesting cover for turkey and screening cover for mule deer. Many of the current day sandy bottomland sites are showing a lack of cottonwood regeneration. Fencing off riparian areas like the sandy bottomland site and allowing only limited access by livestock, may help improve the diversity and productivity of these sites.

Although recent climatic warming trends and increased atmospheric carbon dioxide may be enhancing vegetative change, the major forces influencing the transition from the historic climax plant community are continuous heavy grazing and the decrease in the frequency and intensity of fire. As livestock and wildlife numbers increase and grazing use exceeds a plants ability to sustain defoliation, the more palatable and generally more productive species decline in stature, productivity and density.

If abusive grazing continues for long periods of time, ecologic retrogression occurs. As retrogression proceeds, this site will move towards the Midgrass/Annual Forbs/Shrub Community (2.1). The tallgrasses will be much reduced and less palatable midgrasses will increase. Undesirable shrubs such as saltcedar and willow baccharis as well as annual forbs and low quality grasses will increase on the site. Production of vegetation has shifted from mostly herbaceous to more woody, although herbaceous vegetative biomass is still the largest amount. The plant community will be less diverse than the reference plant community. There will be an increase in the percent bare ground scattered throughout the site. In this phase, ecological processes have changed somewhat, but the pathway back toward the reference can be initiated through prescribed grazing, primarily deferment during the growing season for three to four years, some prescribe burning and selective brush and pest management may be necessary.

If abusive grazing continues, along with periodic droughts, retrogression will move towards a Shrub/Annuals Community (3.1). The result will often be an invasion of numerous shrubs and weedy annual species. Saltcedar may dominate the site with willow baccharis and occasionally sand sagebrush increasing on the site. The percent bare ground may continue to increase to (>40%). This phase of retrogression has low production potential and diversity is limited. The ecological processes are not functioning very well; poor hydrological conditions prevail. The plant community is so degraded that it cannot reverse retrogression without extensive energy and management inputs; therefore a major threshold has been crossed. Restoration of the Shrub/Annuals Community (3.1) requires extensive brush and pest management, re-seeding, and prescribed grazing. Care must be taken using herbicides due to possible damage to valuable trees. Prescribed fire can be used, but usually in this phase of retrogression there is not enough fine fuel to carry an effective fire. In general, if prescribed fire is feasible, fire should be applied with care and desirable trees like cottonwood should be protected and burning should occur before the cottonwoods bud out in the spring.

This site, if managed properly, can be very productive. Careful management is needed in order to sustain reference plant community as this site is considered a sensitive site. In addition to abusive grazing, this site has been known to decline in ecological condition in some cases due to lowered water tables and decreased spring flow. If water table depths decreases, then mid and shortgrasses sometimes increase due to less water requirement. Heavy stands of shrubs can also lower water tables in certain instances. It is also possible that pumping of ground water for agricultural and municipal use has had an adverse affect on the site soil/water/plant relationships.

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

STATE AND TRANSITIONAL PATHWAYS: (DIAGRAM)

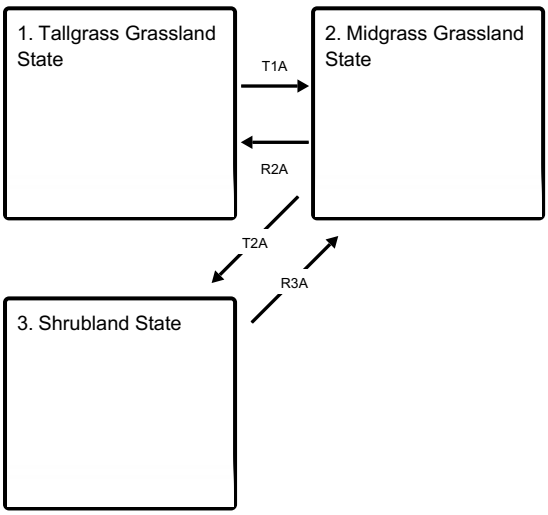
Narrative:
The following diagram suggests some pathways that the vegetation on this site might take. There may be other states not shown on the diagram. This information is intended to show what might happen in a given set of circumstances; it does not mean that this would happen the same way in every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

As a site changes in the structure and makeup of the plant community, the changes may be due to management or due to natural occurrences or both. At some point in time thresholds are crossed. This means that once changes have progressed to some certain point, the balance of the community has been altered to the extent that a return to the former state is not possible, that is, not possible unless some form of energy is applied to make it happen. These changes take place on all ecological sites, but some sites support communities that are more resistant to change than other sites. Also, some sites are more resilient, that is, they tend to be able to heal or restore themselves more easily. Usually, changes in management practices alone, such as grazing techniques, will not be sufficient to restore former plant communities. An example of energy input might be the implementation of chemical or mechanical brush management to decrease the amount of woody shrubs and increase the amount of grasses and forbs. This shift in community balance could not be brought about with grazing alone. The amount of energy required to bring about a change in plant community balance may vary a great deal depending on the present state and upon the desired result.

As it relates to this site, the plant community balance is more fragile than some of the shortgrass sites are. This balance is necessary for the community to function properly. Tallgrasses are not as resistant to grazing as short and midgrass species. The soil is more fragile since it is sandy and can result in plant and soil disturbance from hoof action. If cover is very poor, wind erosion will occur.

State and transition model

Ecosystem states



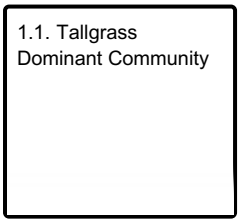
T1A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

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

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

R3A - Adequate rest from defoliation and removal of woody canopy

State 1 submodel, plant communities



State 2 submodel, plant communities

2.1. Midgrass/Annual Forbs/Shrubs Community

State 3 submodel, plant communities

3.1. Shrubs/Annuals Dominant Community

State 1
Tallgrass Grassland State

Tallgrass Dominant Community with secondary midgrasses, diverse perennial forbs, scattered tree cover and motts or groves of trees. Tallgrasses include sand bluestem, little bluestem, switchgrass and Indiangrass form a moderate cover on this site. Several midgrasses such as sand dropseed, sand paspalum, and sand lovegrass were also present. On areas containing small dunes, giant sandreed may be found. In some cases, common reedgrass may occur in small aggregations. Common shrubs are skunkbush sumac and sand plum. Cottonwood and willows occasionally occur where the water table is high. Indigobush amorpha and sand sagebrush may also be present in lesser amounts. Forbs such as Illinois bundleflower, catclaw sensitivebriar, gaura, primrose species, western ragweed and various annual forbs make up about 10% of the vegetative component on a dry matter basis. Minimal bare soil. Moderate to high productivity.

Community 1.1
Tallgrass Dominant Community

Figure 8. 1.1 Tallgrass Dominant Community

The interpretive or "Reference" plant community for this site is the tallgrass plant community. This site was influenced somewhat by fairly frequent (10-15 year) fires. The deeper soils and location of the site along major streams with occasional flooding, and usually a high water table, supported a continuous cover of grasses and forbs with scattered woody plants. Production was high and the ecological processes were functioning at their peak. Tallgrasses such as switchgrass, Indiangrass, little bluestem, giant sandreed, tall dropseeds and sand bluestem dominated the site with lesser amounts of the midgrasses. There were many lesser grasses and many forb species found in the HCPC (see plant species composition and group annual production section below). Scattered woody shrubs and trees made up less than (5%) of the total production of this site. Scattered Cottonwoods and willows found where the water table is high. Most energy and nutrient cycling was contained in the narrow grass/soil interface and evapo-transpiration was minimal.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1009	1261	1513
Forb	56	73	90
Shrub/Vine	34	39	45
Tree	22	28	34
Microbiotic Crusts	–	–	–
Total	**1121**	**1401**	**1682**

Figure 10. Plant community growth curve (percent production by month). TX0756, Tallgrass Dominant Community. Tallgrass Dominant with Midgrasses, Forbs, Shrubs and Trees..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	4	8	20	28	15	8	8	5	2	0

State 2
Midgrass Grassland State

If excessive grazing continues for long periods of time, ecologic retrogression occurs. As retrogression proceeds, this site will move towards the Midgrass/Annual Forbs/Shrub Community (2.1). The tallgrasses will be much reduced and less palatable midgrasses will increase. Undesirable shrubs such as saltcedar and willow baccharis as well as annual forbs and low quality grasses will increase on the site. Production of vegetation has shifted from mostly herbaceous to more woody, although herbaceous vegetative biomass is still the largest amount. The plant community will be less diverse than the reference plant community. There will be an increase in the percent bare ground scattered throughout the site.

Community 2.1
Midgrass/Annual Forbs/Shrubs Community

Figure 11. 2.1 Midgrass/Annual Forbs/Shrubs Community

This plant community represents the first phase in the transition of the Midgrass/Annual Forbs/ Shrubs Community (2.1) toward the Shrub/Annuals Community (3.1). The tallgrasses will be much reduced and lower order successional midgrasses will increase. Undesirable shrubs such as saltcedar and willow baccharis will increase in areas where the water table is high. Annual forbs and low quality grasses will also increase on the site along with an increase in the percent bare-ground. Production of vegetation has shifted from mostly herbaceous to more woody, although herbaceous vegetative biomass is still the largest amount. The plant community will be less diverse than the reference community. In this phase, ecological processes have changed somewhat, but the pathway back toward the reference community can be initiated through prescribed grazing, primarily deferment during the growing season for three to four years. Some prescribe burning, selective brush and pest management may be necessary.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	785	953	1233
Shrub/Vine	168	224	280
Forb	112	140	168
Tree	22	28	34
Microbiotic Crusts	–	–	–
Total	**1087**	**1345**	**1715**

Figure 13. Plant community growth curve (percent production by month). TX0757, Midgrass/Annual Forbs/Shrubs Community. Few tall grasses, increased midgrasses, and increasing shrub cover. Increase in bare ground with a decrease in diversity and productivity..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	4	15	24	20	14	7	8	4	2	1

State 3
Shrubland State

If heavy continuous grazing continues, along with periodic droughts, retrogression will move towards a Shrub/Annuals Community (3.1). The result will often be an invasion of numerous shrubs and weedy annual species. Saltcedar may dominate the site with willow baccharis and occasionally sand sagebrush increasing on the site. The percent bare ground may continue to increase to (>40 percent). This phase of retrogression has low production potential and diversity is limited. Poor hydrological conditions prevail.

Community 3.1
Shrubs/Annuals Dominant Community

Figure 14. 3.1 Shrubs/Annuals Dominant Community

This plant community is so degraded that it cannot reverse retrogression without extensive energy and management inputs; therefore a major threshold has been crossed. The result will often be an invasion of numerous shrubs and weedy annual species. Saltcedar may dominate the site along with willow baccharis. Occasionally sand sagebrush increases on the site. This phase of retrogression has low production potential and diversity is limited. There will be large areas of bare ground (>40 percent) scattered throughout the site. The ecological processes are not functioning very well; poor hydrological conditions prevail. Restoration of the Shrub/Annuals Community (3.1) requires extensive brush and pest management (1 or more applications), re-seeding, and prescribed grazing (1 – 3 consecutive years). Care must be taken using herbicides due to possible damage to valuable trees. Prescribed fire can be used, but usually in this phase of retrogression there is not enough fine fuel to carry an effective fire. In general, if prescribed fire is feasible, fire should be applied with care and desirable trees like cottonwood should be

protected and burning should occur before the cottonwoods bud out in the spring.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	616	785
Shrub/Vine	336	448	560
Forb	224	392	448
Tree	22	28	34
Microbiotic Crusts	–	–	–
Total	**1030**	**1484**	**1827**

Figure 16. Plant community growth curve (percent production by month). TX0758, Shrubs/Annuals Dominant Community. Shrubs dominate the site. The understory consist of annual forbs and few grasses. Bare ground has increased to (>40%). .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	4	16	30	25	6	5	5	4	2	1

Transition T1A
State 1 to 2

With heavy continuous grazing pressure, no fire, and brush invasion, the Tallgrass Grassland State has transition to the Midgrass Grassland State.

Restoration pathway R2A
State 2 to 1

With the application of various conservation practices such as Prescribed Grazing, Brush Management, Pest Management, and Prescribed Burning, the Midgrass Grassland State can be restored to the Tallgrass Grassland State.

Conservation practices

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

Transition T2A
State 2 to 3

With heavy continuous grazing, no fire, and brush invasion, the Midgrass Grassland State continues to degrade and leads to the Shrubland State.

Restoration pathway R3A
State 3 to 2

Restoration of the Shrub/Annuals Community (3.1) to the Midgrass Grassland State requires extensive brush and pest management, range planting, and prescribed grazing. Care must be taken using herbicides due to possible damage to valuable trees. Prescribed fire can be used, but usually in this phase of retrogression there is not enough fine fuel to carry an effective fire.

Conservation practices

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

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Tallgrasses**			504–762	
	switchgrass	PAVI2	*Panicum virgatum*	336–673	–
	little bluestem	SCSC	*Schizachyrium scoparium*	336–673	–
	sand bluestem	ANHA	*Andropogon hallii*	336–673	–
	giant sandreed	CAGI3	*Calamovilfa gigantea*	224–448	–
2	**Cool-season grasses**			56–90	
	Canada wildrye	ELCA4	*Elymus canadensis*	56–90	–
	needle and thread	HECO26	*Hesperostipa comata*	56–90	–
3	**Midgrasses/Tallgrasses**			112–168	
	sand lovegrass	ERTR3	*Eragrostis trichodes*	84–140	–
	Indiangrass	SONU2	*Sorghastrum nutans*	84–140	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	84–112	–
	thin paspalum	PASE5	*Paspalum setaceum*	39–84	–
4	**Midgrasses**			224–336	
	spike dropseed	SPCO4	*Sporobolus contractus*	112–280	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	112–280	–
	giant dropseed	SPGI	*Sporobolus giganteus*	112–280	–
5	**Shortgrasses**			112–157	
	hairy grama	BOHI2	*Bouteloua hirsuta*	84–112	–
	fall witchgrass	DICO6	*Digitaria cognata*	28–84	–
	red lovegrass	ERSE	*Eragrostis secundiflora*	28–84	–
	fringed signalgrass	URCI	*Urochloa ciliatissima*	28–84	–
	Wright's threeawn	ARPUW	*Aristida purpurea var. wrightii*	28–84	–
Forb					
6	**Forbs**			56–84	
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	56–78	–
	spoonleaf buckwheat	ERSP5	*Eriogonum spathulatum*	28–56	–
	beeblossom	GAURA	*Gaura*	28–56	–
	camphorweed	HESU3	*Heterotheca subaxillaris*	28–56	–
	blazingstar	MENTZ	*Mentzelia*	28–56	–
	littleleaf sensitive-briar	MIMI22	*Mimosa microphylla*	28–56	–
	evening primrose	OENOT	*Oenothera*	28–56	–
	queen's-delight	STSY	*Stillingia sylvatica*	28–56	–
	Forb, annual	2FA	*Forb, annual*	28–56	–

Shrub/Vine					
7	**Shrubs**			34–50	
	Oklahoma plum	PRGR	*Prunus gracilis*	28–50	–
	skunkbush sumac	RHTR	*Rhus trilobata*	28–50	–
	false indigo bush	AMFR	*Amorpha fruticosa*	28–50	–
	sand sagebrush	ARFI2	*Artemisia filifolia*	28–50	–
	saltwater false willow	BAAN	*Baccharis angustifolia*	28–39	–
Tree					
8	**Trees**			22–34	
	eastern cottonwood	PODE3	*Populus deltoides*	22–34	–
	black willow	SANI	*Salix nigra*	22–34	–

Animal community

Turkey, deer, squirrel, quail and many small mammals utilize the site for critical habitat. Roosting and nesting cover are critical for turkey. Deer and quail utilize the site for nesting, escape cover and bedding. The variety of plant species provides a diverse wildlife habitat situation.

Hydrological functions

Good vegetation of tall grasses, forbs and woody plants decrease evaporation and eliminate excessive use of ground water. The vegetation acts as a filter to reduce siltation down stream. Good cover reduces damage from intermittent flooding.

Recreational uses

Hunting, Camping, Hiking, Bird watching, Photography, 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.

NRCS FOTG – Section II - Range Site Descriptions

NRCS Clipping Data summaries over a 20 year period

Other references

J.R. Bell, USDA-NRCS Rangeland Management Specialist (retired)
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USDA-Natural Resources Conservation Service - Soil Surveys & Website soil database
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Hatch, Brown and Ghandi, Vascular Plants of Texas (An Ecological Checklist)
Texas A&M Exp. Station, College Station, Texas
Texas Tech University – Range, Wildlife & Fisheries Dept.

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Clint Rollins, RMS, NRCS, Amarillo, Texas
Mark Moseley, RMS, NRCS, San Antonio, Texas
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Approval

Bryan Christensen, 9/11/2023

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.

Reviewers:
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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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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.

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

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:** Slight to moderate.

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):** Not resistant to surface erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Loamy fine sand single grain surface with medium 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 is a rapidly permeable soil, runoff is slow and available water holding capacity is low.

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 >

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

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Grasses due to their growth habit will exhibit some mortality and decadence, though minimal.

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

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1,800 to 2,500 pounds per acre.

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Baccharis, salt cedar, and russian olive can be potentially invasive on this site.

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