Ecological site R077BY725TX
Draw 12-17" PZ

Last updated: 9/11/2023
Accessed: 04/20/2024

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

This unit 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

This site occurs on loamy soils on valleys and draws. The reference vegetation consists of midgrasses with forbs and few woody plants. Abusive grazing practices can lead to a change in the plant community. Without fire or other brush management, woody species may increase across the site.

Associated sites

R077BY021TX	**Sandy Loam 12-17" PZ** Sandy Loam sites are the most common upland sites associated with Draw sites, providing the majority of the watershed drainage. Midgrasses dominate but some tallgrasses can be found on this site. Production is less than the Draw site.
R077BY020TX	**Sand Hills 12-17" PZ** In parts of the watershed above the Draw sites, Sand Hill sites can be found along both sides of the Draw site. Tallgrasses dominate but some midgrass can be found on this site. Production is less than the Draw site.
R077BY722TX	**High Lime 12-17" PZ** In parts of the watershed above the Draw sites, High Lime sites can be found along both sides of the Draw site. Midgrasses dominate but a good mixture of tallgrasses can be found on this site. Production is less than the Draw site.
R077BY700TX	**Sandy Bottomland 12-17" PZ** Adjacent to the Draw sites on the same landform. Tallgrasses dominate but a good mixture of midgrasses can be found on this site. Production is often more than the Draw site.
R077BY016TX	**Limy Upland 12-17" PZ** In parts of the watershed above the Draw sites, Limey Upland sites can be found along both sides of the Draw site. Shortgrasses dominate but a good mixture of midgrasses can be found on this site. Production is less than the Draw site.

Similar sites

R077AY002TX	**Draw 16-22" PZ** Similar to the Draw site in MLRA77B is the Draw site in MLRA 77A. Annual precipitation is higher (16 to 22 inches). Production is higher than the Draw site in MLRA 77B.
R077BY700TX	**Sandy Bottomland 12-17" PZ** Sandy Bottomland sites are similar to Draw sites, both are located on nearly level flood plains. Sandy Bottomland are more frequently flooded and have more woody plants and higher forage production.
R077EY065TX	**Sandy Bottomland 16-24" PZ** This site has deep to very deep sandy soils like the Draw site in MLRA 77B. Mean annual temperature is higher (59 to 63 degrees F). Mean annual precipitation is higher (16 to 24 inches). Midgrasses dominate, but tallgrasses can be found on this site. More productive than the Draw site in MLRA 77B.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Baccharis salicina*
Herbaceous	(1) *Pascopyrum smithii* (2) *Panicum obtusum*

Physiographic features

This site occurs as valley floors and along stream flood plains. Most areas flood about once each 1 to 5 years for short duration. Slopes are nearly level to very gently sloping. The site is found along ancient drainage ways that dissect the high plains. The site may or may not be channeled. Generally, draws with large drainage areas have defined channels. This site is associated with drainages such as Carrizo Creek and Rita Blanca Creek. These are upper drainages of the Canadian River Systems.

Table 2. Representative physiographic features

Landforms	(1) Plateau > Draw (2) Plateau > Ephemeral stream
Runoff class	Negligible
Flooding duration	Brief (2 to 7 days)

Flooding frequency	None to occasional
Ponding frequency	None
Elevation	3,600–5,300 ft
Slope	0–1%
Water table depth	80 in
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

Climate is semi-arid dry steppe. Summers are hot with winters being generally mild with numerous cold fronts that drop temperatures into the single digits for 24 to 48 hours. Temperature extremes are the rule rather than the exception. Humidity is generally low and evaporation high. Wind speeds are highest in the spring and are generally southwesterly. Canadian and Pacific cold fronts come through the region in fall, winter and spring with predictability and temperature changes can be rapid. Most of the precipitation comes in the form of rain and during the period from May through October. Snowfall averages around 15 inches but may be as little as 8 inches or as much as 36 inches. Rainfall in the growing season often comes as intense showers of relatively short duration. Long-term droughts occur on the average of once every 20 years and may last as long as five to six years (during these drought years, moisture during the growing season is from 50 to 60 percent of the mean). Based on long-term records, approximately 60 percent of the years are below the mean rainfall and approximately 40 percent are above the mean. May, June and July are the main growth months for perennial warm-season grasses. Forbs make their growth somewhat earlier.

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)	17-18 in
Frost-free period (actual range)	139-147 days
Freeze-free period (actual range)	168-170 days
Precipitation total (actual range)	16-18 in
Frost-free period (average)	143 days
Freeze-free period (average)	169 days
Precipitation total (average)	17 in

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

Water features are ephemeral streams within draws. This site receives runoff from surrounding areas. Flooding occurs as overflow from heavy rainfall events.

Wetland description

N/A

Soil features

The Draw site is made up of deep, nearly level, calcareous fine sandy loams on nearly level flood plains. They formed in moderately coarse textured calcareous alluvial materials. The subsurface horizons are fine sandy loam with thin strata of darker and lighter colored loam and loamy sand. Visible calcium carbonate ranges from 0 to about 5 percent. Below this is dominantly sandy loam or loamy sand, with many thin strata of loam, sandy clay loam, and clay loam materials. Due to the sandy loam surface texture, wind and water erosion is moderate without vegetative cover.

Major Soil Taxonomic Units correlated to this site include: Dalupe fine sandy loam.

Table 4. Representative soil features

Parent material	(1) Alluvium–igneous, metamorphic and sedimentary rock
Surface texture	(1) Fine sandy loam
Family particle size	(1) Coarse-loamy
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Soil depth	80 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	3–6 in
Calcium carbonate equivalent (0-40in)	0–5%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.9–8.4
Subsurface fragment volume <=3" (0-40in)	0–2%
Subsurface fragment volume >3" (0-40in)	0%

Ecological dynamics

The reference plant community under the prevailing climate over time along with the soils in their topographic location. Grazing and/or browsing by local and nomadic wildlife influenced the plant community as well. The Draw site in MLRA 77B may host two slightly different plant communities depending on soil moisture. Where long-term soil moisture has been low, plant community (1.1) will be dominated by midgrasses with lesser amounts of shortgrass species. Few tallgrasses, forbs and woody plants will be found. In instances where soil moisture conditions are more favorable, plant community (1.2) will still be dominated by midgrass species with a higher percentage of tallgrasses present and lesser amounts of shortgrass species. Forbs and woody plants will be more prevalent along areas that tend to pond water for longer periods.

The dominant midgrass species are western wheatgrass (*Pascopyrum smithii*), vine mesquite (*Panicum obtusum*), and sideoats grama (*Bouteloua curtipendula*). Lesser amounts of blue grama (*Bouteloua gracilis*) and buffalograss (*Bouteloua dactyloides*) will be present along with smaller compliments of switchgrass (*Panicum virgatum*), sand bluestem (*Andropogon hallii*) and Indiangrass (*Sorghastrum nutans*).Where slightly saline influences exist, alkali sacaton (*Sporobolus airoides*) may be a significant component. The significant presence of western wheatgrass makes this site preferred in the cool season as well as in the summer. At times there may be small holes of water

present in the drainage channels. These provide a good source of water for wildlife and occasionally some plants such as curly dock (*Rumex crispus*) and smartweed (Polygonum spp.) may be found growing in wetter years. Productivity on this site is fairly high due to a deep soils and extra runoff from adjacent upland sites. Since the site occupies a location lower on the landscape, animals prefer to take shelter from wind during the colder part of the year.

Commonly found forbs are Baldwin ironweed (*Vernonia baldwinii*), Illinois bundleflower (*Desmanthus illinoensis*), gaura (Guara spp.), sagewort (Artemisia spp.), curlycup gumweed (*Grindelia squarrosa*), heath aster (Aster ericoides), Engelmann's daisy (*Engelmannia peristenia*), Maximilian sunflower (Helianthus maximilianus), scurfpea (*Psoralidium tenuiflorum*), western ragweed (*Ambrosia psilostachya*), and numerous annuals. Few scattered elm (Ulmus spp.), hackberry (Celtis spp.), and cottonwood (*Populus deltoides*) occur but these are not as prevalent as on loamy or wet bottomland sites. A few shrubs such as willow baccharis (*Baccharis salicina*), wild plum (Prunus spp.) and occasional yucca (*Yucca glauca*) and/or sand sagebrush (*Artemisia filifolia*) will be present. Nutrient cycling, the water cycle, watershed protection and biological functions are functioning at their peak.

Grazing by large herbivores played a major role in shaping the site vegetatively. It is well documented that large herds of bison often grazed the site and domestic livestock prefer it as well. As bison migrated with the seasons, these sites received heavy grazing pressure from time to time but had long recovery periods. There is considerable evidence of haying of these sites by early day settlers. The increased productivity was recognized and the quality of the forage was good.

Natural fire also played a major role in grassland ecology. The general role of fire seems to have been to perpetuate grasslands and keep any encroaching woody vegetation at bay. Woody plants were scattered along the channels where they could often escape fires, but there is little doubt that fire kept the number of woody plants controlled. Fires may have occurred as often as every 5 to 7 years on the average and this site usually had an above average fuel load compared to other plains sites.

The major forces influencing the transition away from the reference plant community is continued over-grazing by livestock 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.

Western wheatgrass acts as a strong increaser with initial grazing pressure. If abusive grazing is practiced for many years, western wheatgrass and other midgrasses will give way to increasing amounts of buffalograss and blue grama. These short grasses are better adapted to grazing pressure. The more desirable forbs decrease rapidly with abuse and western ragweed increases along with a host of annual forbs. In some cases, cool-season annual grasses such as Japanese brome (Bromus spp.) and little barley (*Hordeum pusillum*) will become excessive and compete strongly with perennials. Woody plants such as yucca and/or sand sagebrush often start to increase and become a higher percentage of the total composition. The decrease in density and stature of the mid and tallgrass species along with an increase in shortgrasses brings about a new plant community, the Shortgrass/Midgrass Plant Community phase (2.1).

In the Shortgrass/Midgrass Plant Community (2.1) phase, the transition back to near reference conditions is possible with proper grazing management and chemical brush management. Prescribed burning could be used if the conditions allow. The production of vegetation has shifted from mostly herbaceous vegetation to more woody, although the herbaceous vegetation biomass is still the largest amount. Nutrient cycling, the water cycle, watershed protection and biological functions have changed little.

If long term heavy grazing continues, a threshold will be crossed to the Degraded Shortgrass/ Annuals/Shrubs Plant Community phase (3.1). In this degraded state, typical vegetation will be low vigor blue grama and buffalograss. Bare areas will open up with annuals filling the voids. Perennial threeawn will invade when the more desirable grasses are weakened and/or removed. Yucca and/or sand sagebrush will increase dramatically. Often pricklypear (Opuntia spp.) will gain a foothold on the site. Occasionally, broom snakeweed (*Gutierrezia sarothrae*) will increase to the point of domination. The loss of herbaceous cover and increased bare ground encourages accelerated erosion. Nutrient cycling, the water cycle, watershed protection and biological functions have been severely reduced.

The plant community is so degraded that it cannot reverse retrogression without extensive energy and

management inputs. Restoration of phase (3.1) will require prescribed grazing with rest periods during the growing season, re-seeding bare areas with adapted native grass species, and chemical and/or mechanical brush management and some form of pest management. Where active gully erosion has occurred, mechanical shaping and re-vegetation will be needed. With the reduced amounts of grass fuel, prescribed burning is usually not an option in this phase.

If good plant cover is not maintained on this site, erosion from water can become a problem. Gullies may appear and the channels, which are usually grass covered, become deeper and are sometimes devoid of cover.

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.

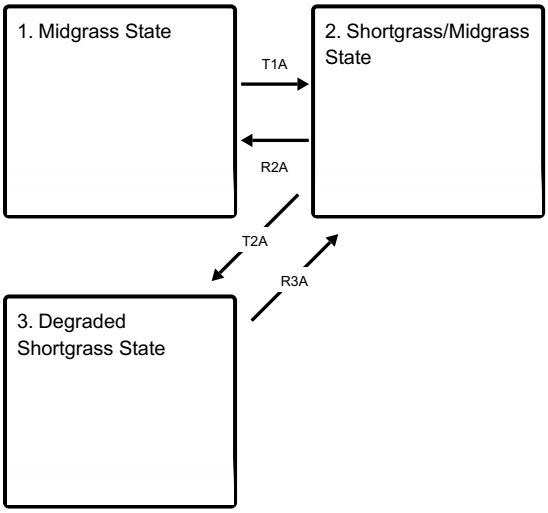
STATE AND TRANSITIONAL PATHWAYS: (DIAGRAM)

Narrative:
As a site changes in the structure and makeup of the plant community, the changes may be due to management, 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 tipped to the extent that a return to the former state is not possible unless some form of energy is applied. 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. 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.

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

State and transition model

Ecosystem states



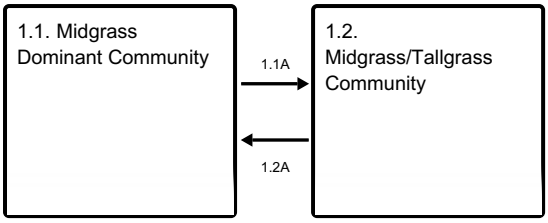
T1A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

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

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

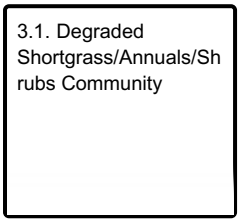
R3A - Adequate rest from defoliation and removal of woody canopy, followed by rangeland seeding

State 1 submodel, plant communities



State 2 submodel, plant communities

State 3 submodel, plant communities



State 1
Midgrass State

The Draw site in 77B may host two slightly different plant communities depending on soil moisture. Where long-term soil moisture has been low, the Midgrass Dominant Community (1.1) will be dominated by midgrasses with lesser amounts of shortgrass species. Few tallgrasses, forbs and woody plants will be found. In instances where soil moisture conditions are more favorable, Mid/Tallgrass Dominant Community (1.2) will still be dominated by midgrass species with a higher percentage of tallgrasses present and lesser amounts of shortgrass species. Forbs and woody plants will be more prevalent along areas that tend to pond water for longer periods.

Dominant plant species

- western wheatgrass (*Pascopyrum smithii*), grass
- vine mesquite (*Panicum obtusum*), grass

Community 1.1
Midgrass Dominant Community

Figure 8. 1.1 Midgrass Dominant Community

Where long-term soil moisture has been low, plant community (1.1) will be dominated by midgrasses with lesser amounts of shortgrass species and few tallgrasses, forbs and woody plants. The dominant midgrass species are western wheatgrass, vine mesquite and sideoats grama, making up (>55%) of the total composition. The primary shortgrasses are blue grama and buffalograss accounting for an additional (>20%) of the total production. Tallgrasses include Indiangrass, sand bluestem and switchgrass making up (<5%) of the plant community composition. Other grasses present in lesser amounts (<10%), were alkali sacaton, silver bluestem, Texas bluegrass, Canada wildrye and inland saltgrass. Where slightly saline influences exist, alkali sacaton and inland saltgrass will be a significant component. There is a good variety of perennial forbs (see Annual Production below) making up (<5%) of the plant community. Yucca, wild plum and willow baccharis accounted for (<5%) with a few scattered trees consisting of cottonwoods, elms, and hackberry. The plant community's ecological processes were in balance with the environment. Most energy and nutrient cycling was contained in the narrow grass/soil interface and evapo-transpiration was minimal. Maintenance of this plant community requires continued proper grazing management as well as occasional brush and pest management.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1440	2610	3780
Forb	80	145	210
Shrub/Vine	75	137	200
Microbiotic Crusts	5	8	10
Tree	0	0	1
Total	**1600**	**2900**	**4201**

Figure 10. Plant community growth curve (percent production by month). TX0763, Midgrass/Shortgrass (low soil moisture). Warm season midgrass dominant with lesser amounts of shortgrasses. Few tallgrasses, forbs and woody plants also exist. .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	8	12	16	24	13	9	8	4	4	0

Community 1.2
Midgrass/Tallgrass Community

Figure 11. 1.2 Midgrass/Tallgrass Community

Where soil moisture is favorable, the Mid/Tallgrass Dominant Community (1.2) will be dominated by midgrasses with a larger component of tallgrasses and lesser amounts of shortgrass species. Forbs and woody shrubs and trees may be more prevalent near depressional areas that hold water for extended periods. The dominant midgrass species are still western wheatgrass, vine mesquite and sideoats grama, making up (>55%) of the total composition with Indiangrass, sand bluestem and switchgrass accounting for (>20%) of the plant community. Blue grama,

buffalograss and lesser midgrasses will make up (<15%) of the total production. With the favorable soil moisture, there will be a better variety of perennial forbs making up (<5%) of the plant community. The woody shrubs may account for (>5%) in areas that pond water for extended periods. The tree component will generally make up (<1%) of the total composition of the site.

Table 6. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1800	2925	4050
Forb	100	163	225
Shrub/Vine	90	148	205
Microbiotic Crusts	10	14	20
Tree	0	0	1
Total	**2000**	**3250**	**4501**

Figure 13. Plant community growth curve (percent production by month). TX0762, Midgrass/Tallgrass (favorable soil moisture). Warm season midgrass dominant with lesser amounts of tallgrasses. Few shortgrasses, increased forbs and few woody plants. .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	8	10	15	20	15	10	10	5	5	0

Pathway 1.1A
Community 1.1 to 1.2

Midgrass Dominant Community

Midgrass/Tallgrass Community

With favorable rain and soil moisture conditions, the Midgrass Dominant Community would shift to the Mid/Tallgrass Dominant Community.

Pathway 1.2A
Community 1.2 to 1.1

Midgrass/Tallgrass Community

Midgrass Dominant Community

With the shift from a wet season regime to a dryer soil moisture regime, the Mid/Tallgrass Dominant Community will shift to the Midgrass Dominant Community.

State 2
Shortgrass/Midgrass State

Western wheatgrass acts as a strong increaser with initial grazing pressure. If abusive grazing is practiced for many years, western wheatgrass and other midgrasses will give way to increasing amounts of buffalograss and blue grama. These short grasses are better adapted to grazing pressure. The more desirable forbs decrease rapidly with abuse and western ragweed increases along with a host of annual forbs. In some cases, cool-season annual

grasses such as Japanese brome and little barley will become excessive and compete strongly with perennials. Woody plants such as yucca and/or sand sagebrush often start to increase and become a higher percentage of the total composition. The decrease in density and stature of the mid and tallgrass species along with an increase in shortgrasses brings about a new plant community, the Shortgrass/Midgrass Plant Community phase (2.1).

Dominant plant species

- buffalograss (*Bouteloua dactyloides*), grass
- blue grama (*Bouteloua gracilis*), grass

Community 2.1
Shortgrass/Midgrass Community

Figure 14. 2.1 Shortgrass/Midgrass Community

Western wheatgrass acts as a strong increaser as grazing pressure initially increases. If abusive grazing is practiced for many years, the western wheatgrass and other midgrasses will give way to increasing amounts of buffalograss and blue grama. These shortgrasses can adapt better to grazing pressure. Sideoats grama and vine mesquite can still be found scattered throughout the site with few tallgrass plants remaining. The more desirable forbs decrease rapidly with abuse and western ragweed increases with a host of annual forbs. In some cases, cool-season annual grasses such as Japanese brome (Bromus spp.) and little barley (*Hordeum pusillum*) will become excessive and compete strongly with perennials. Woody plants such as yucca and/or sand sagebrush often start to increase and become a higher percentage of the total composition on this site. The decrease in density and stature of the mid and tallgrass species along with an increase in shortgrasses brings about a new plant community, the Shortgrass/Midgrass Plant Community phase (2.1). In the Shortgrass/Midgrass Plant Community phase, the transition back to near reference conditions is possible with proper grazing management and chemical brush management. Prescribed burning could be used if the conditions allow. The production of vegetation has shifted from mostly herbaceous vegetation to more woody, although the herbaceous vegetation biomass is still the largest amount. Nutrient cycling, the water cycle, watershed protection and biological functions have changed little.

Table 7. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	1000	1400	2000
Forb	100	175	250
Shrub/Vine	90	137	230
Microbiotic Crusts	5	8	10
Tree	0	0	1
Total	**1195**	**1720**	**2491**

Figure 16. Plant community growth curve (percent production by month). TX0761, Shortgrass/Midgrass with annual forbs/shrubs. Warm-season shortgrasses dominant with lesser amounts of mid and tallgrasses. There is an increase of annual forbs and woody shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	5	9	23	24	12	7	10	5	2	1

State 3
Degraded Shortgrass State

If long-term heavy grazing continues, a threshold will be crossed to the Degraded Shortgrass/Annuals/Shrubs Community (3.1). In this degraded state, typical vegetation will be low vigor blue grama and buffalograss. Bare areas will open up with annuals filling the voids. Perennial threeawn will invade when the more desirable grasses are weakened and/or removed. Yucca and/or sand sagebrush will increase dramatically. Often pricklypear (Opuntia spp.) will gain a foothold on the site. Occasionally, broom snakeweed (*Gutierrezia sarothrae*) will increase to the point of domination. The loss of herbaceous cover and increased bare ground encourages accelerated erosion.

Dominant plant species

- yucca (*Yucca*), shrub
- sand sagebrush (*Artemisia filifolia*), shrub
- threeawn (*Aristida*), grass

Community 3.1
Degraded Shortgrass/Annuals/Shrubs Community

Figure 17. 3.1 Degraded Shortgrass/ Annuals/ Shrubs Community

When long-term heavy grazing continues, a threshold will be crossed to a Degraded Shortgrass Community (3.1). In this degraded state, typical vegetation will be low vigor blue grama and buffalograss, bare areas will open up with annuals filling the voids. Perennial threeawn will invade when the more desirable grasses are weakened and/or removed. Yucca and/or sand sagebrush will increase dramatically; often pricklypear (Opuntia spp.) will gain a foothold on the site. Occasionally, broom snakeweed (*Gutierrezia sarothrae*) will increase to the point of domination. The loss of herbaceous cover and increased bare ground encourages accelerated erosion and usually occurs during heavy rainfall events. Nutrient cycling, the water cycle, watershed protection and biological functions have been severely reduced.

Table 8. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	500	850	1200
Shrub/Vine	200	300	400
Forb	150	225	300
Tree	0	0	1
Microbiotic Crusts	0	0	0
Total	**850**	**1375**	**1901**

Figure 19. Plant community growth curve (percent production by month). TX0760, Degraded Shortgrass/Annuals/Shrubs. Low vigor shortgrasses, increase annuals and woody shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	5	15	30	25	5	3	6	6	2	1

Transition T1A
State 1 to 2

The Midgrass State would shift to the Shortgrass/Midgrass State with heavy continuous grazing pressure, No fires, and no brush management practices.

Restoration pathway R2A
State 2 to 1

With the implementation of rangeland conservation practices such as Prescribed Grazing over a three to five year period as well as Prescribed Burning and Individual Plant Treatment of brush management.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Transition T2A
State 2 to 3

With continuous heavy grazing pressure, brush invasion, no brush management, and no pest management, the Shortgrass/Midgrass State may transition to the Degraded Shortgrass State.

Restoration pathway R3A
State 3 to 2

With the implementation of various rangeland conservation practices such as Prescribed Grazing, Brush Management, Range Planting, and Pest Management, the Degraded Shortgrass State can be shifted to the Shortgrass/Midgrass State.

Conservation practices

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

Additional community tables

Table 9. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Midgrass**			500–1440	
	vine mesquite	PAOB	*Panicum obtusum*	225–775	–
	western wheatgrass	PASM	*Pascopyrum smithii*	225–775	–
2	**Midgrass**			270–1000	
	sideoats grama	BOCU	*Bouteloua curtipendula*	270–1000	–
3	**Shortgrasses**			250–730	
	buffalograss	BODA2	*Bouteloua dactyloides*	250–730	–
	blue grama	BOGR2	*Bouteloua gracilis*	250–730	–
4	**Midgrasses**			50–200	
	saltgrass	DISP	*Distichlis spicata*	50–200	–
	alkali sacaton	SPAI	*Sporobolus airoides*	50–200	–
5	**Tallgrasses**			150–420	
	sand bluestem	ANHA	*Andropogon hallii*	150–420	–
	switchgrass	PAVI2	*Panicum virgatum*	150–420	–
	Indiangrass	SONU2	*Sorghastrum nutans*	150–420	–
6	**Midgrasses**			60–150	
	silver bluestem	BOSA	*Bothriochloa saccharoides*	60–150	–
	tumble windmill grass	CHVE2	*Chloris verticillata*	60–150	–
	Drummond's dropseed	SPCOD3	*Sporobolus compositus var. drummondii*	60–150	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	60–150	–
	white tridens	TRAL2	*Tridens albescens*	60–150	–
7	**Cool-season grasses**			60–150	
	Canada wildrye	ELCA4	*Elymus canadensis*	60–150	–
	needle and thread	HECOC8	*Hesperostipa comata ssp. comata*	60–150	–
	Texas bluegrass	POAR	*Poa arachnifera*	60–150	–
Forb					
8	**Forbs**			80–225	
	Forb, annual	2FA	*Forb, annual*	25–100	–
	white sagebrush	ARLUM2	*Artemisia ludoviciana ssp. mexicana*	25–100	–
	Illinois bundleflower	DEIL	*Desmanthus illinoensis*	25–100	–
	Engelmann's daisy	ENPE4	*Engelmannia peristenia*	25–100	–
	scarlet beeblossom	GACO5	*Gaura coccinea*	25–100	–
	American licorice	GLLE3	*Glycyrrhiza lepidota*	25–100	–
	curlycup gumweed	GRSQ	*Grindelia squarrosa*	25–100	–
	common sunflower	HEAN3	*Helianthus annuus*	25–100	–
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	25–100	–
	slimflower scurfpea	PSTE5	*Psoralidium tenuiflorum*	25–100	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	25–100	–

	white heath aster	SYERE	*Symphyotrichum ericoides var. ericoides*	25–100	–
	Baldwin's ironweed	VEBA	*Vernonia baldwinii*	25–100	–
	hoary verbena	VEST	*Verbena stricta*	25–100	–
Shrub/Vine					
9	**Shrubs**			75–205	
	saltwater false willow	BAAN	*Baccharis angustifolia*	75–205	–
	Oklahoma plum	PRGR	*Prunus gracilis*	75–205	–
	soapweed yucca	YUGL	*Yucca glauca*	75–205	–
Tree					
10	**Trees**			0–1	
	netleaf hackberry	CELAR	*Celtis laevigata var. reticulata*	0–1	–
	eastern cottonwood	PODE3	*Populus deltoides*	0–1	–
	American elm	ULAM	*Ulmus americana*	0–1	–

Animal community

The site supports a variety of small mammals, grassland birds, and predators. It does not afford cover for deer and turkey unless trees and shrubs are more prevalent, which they are often not. Pronghorn use the site especially when forb growth is prolific. Dove and Quail will use the site for nesting and for escape cover.

Hydrological functions

This site acts as a conduit for drainage from the high plains to the major creeks and rivers. With good cover, water quality from runoff is good. If cover is poor, then erosion on the site can be substantial and off site effects are negative. Poor vegetative cover can contribute to flooding over roads and highways in the event of heavy rains.

Recreational uses

Hunting, Camping, Hiking, Birdwatching, 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)
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
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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.

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.

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

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):** 20-25%

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

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

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

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

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

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

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

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant: Cool-season grasses >

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

    Other: Forbs > Shrubs/Vines > Trees

    Additional:

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

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 2,200 - 2,800 lbs/ac

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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:** Yucca and baccharis. Broom snakeweed can become invasive.

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