USDA Natural Resources Conservation Service

Ecological site R077AY002TX
Draw 16-22" PZ

Last updated: 9/11/2023
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General information

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

Figure 1. Mapped extent

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

MLRA notes

Major Land Resource Area (MLRA): 077A–Southern High Plains, Northern Part

MLRA 77A is characterized by nearly level plains with playa depressions and sloping breaks along rivers and creeks. Soils are generally deep, fine-textured, and occur in a mesic soil temperature regime.

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 loam and clay loam soils on collection areas and drainageways. The additional "run on" water from adjacent upland sites leads to high production potential. The reference plant community consists of tall and midgrass and forbs. In the absence of fire, woody species may encroach on these sites.

Associated sites

R077AY004OK	**Parna Dune 16-22" PZ** Gently to moderately sloping silty and loamy soils formed in calcareous parna on higher adjacent dune positions and sideslopes. Dominated by mid- and shortgrass species with very few woody species.
R077AY005TX	**Playa 16-22" PZ** Nearly level clayey soils with high shrink-swell potential on closed depression playa positions that intermittently pond water. Vegetation is variable and includes hydrophytes.
R077AY006TX	**Limy Upland 16-22" PZ** Gently sloping to moderately sloping loamy soils with highly calcareous subsoils on higher shoulder and side slope positions. Short and mid-grass dominate and with few tall grasses, perennial and annual forbs, and few woody species present.
R077AY015KS	**Loamy Upland 16-22" PZ** Nearly level to gently sloping soils on higher positions formed in mixed loamy and silty eolian deposits with subsoils of fine-loamy or fine-silty argillic horizons. Mixture of tall and mid grass species dominate with a few woody species present.
R077AY001TX	**Deep Hardland 16-22" PZ** Nearly level to gently sloping fine-textured soils on higher positions that formed in calcareous loess. Dominated by short and mid-grass species with few woody species.

Similar sites

R077EY052TX	**Draw 16-24" PZ** A similar site in MLRA 77E with soils formed in a slightly warmer thermic soil temperature regime.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Panicum virgatum* (2) *Pascopyrum smithii*

Physiographic features

Slopes are nearly level to very gently sloping. The site is found along drainages that dissect the High Plains. The site may or may not be channeled. These sites are broad drainageways formed by stream incision into the eolian parent material of the High Plains. In some areas, these drainage networks flow into closed playa basins. In most of the area correlated to this site, relatively short broad drainages flow to the boundary of MLRA 77A and then into MLRA 77E where the stream channel narrows, and sideslopes steepen from incision into the underlying Ogallala Formation. These sites are the upper headwaters of larger creeks and stream networks such as Coldwater Creek, Goff Creek, Hannas Draw, Kiowa Creek, Palo Duro Creek, Tierra Blanca Creek, upper Mulberry Creek, upper McClellan Creek, Wolf Creek as well as the major river valleys of the Cimarron, North Canadian (Beaver), South Canadian, and Red River systems. This is a High Plains (MLRA 77A) site.

Table 2. Representative physiographic features

Slope shape across	(1) Concave
Landforms	(1) Plains > Draw
Runoff class	Negligible to low
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to frequent
Ponding frequency	None
Elevation	762–1,372 m
Slope	0–2%

Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Runoff class	Negligible to low
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to frequent
Ponding frequency	None
Elevation	701–1,521 m
Slope	0–3%

Climatic features

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

Most of the precipitation comes in the form of rain from May through September. Rainfall events often occur as intense showers of relatively short duration. Snowfall average is about 15 inches but is also variable from 8 to 36 inches annually. Long term droughts are likely to occur every 15 to 20 years and may last 4 to 5 years. Mean precipitation is around 19 inches but varies significantly from year to year. Rainfall amounts over the last 100 years have varied from as little as 9 inches to as much as 37 inches. The probability is about 70% that precipitation will fall between 14 inches and 23 inches. Growing season averages 180 days. Average first frost is around October 17, and the last freeze of the season occurs around April 21.

Table 4. Representative climatic features

Frost-free period (characteristic range)	143-156 days
Freeze-free period (characteristic range)	175-190 days
Precipitation total (characteristic range)	457-533 mm
Frost-free period (actual range)	138-163 days
Freeze-free period (actual range)	169-194 days
Precipitation total (actual range)	457-559 mm
Frost-free period (average)	150 days
Freeze-free period (average)	182 days
Precipitation total (average)	483 mm

Climate stations used

- (1) BOISE CITY 2 E [USC00340908], Boise City, OK
- (2) STRATFORD [USC00418692], Stratford, TX
- (3) GOODWELL 2 E [USW00003055], Goodwell, OK
- (4) HUGOTON [USC00143855], Hugoton, KS
- (5) LIBERAL [USC00144695], Liberal, KS
- (6) PERRYTON [USC00416950], Perryton, TX
- (7) SPEARMAN [USC00418523], Spearman, TX
- (8) DUMAS [USC00412617], Dumas, TX

- (9) ELKHART [USC00142432], Elkhart, KS

Influencing water features

This site receives runoff from surrounding areas. Overflows are usually over a broad area with large rainfall events and may be confined to channels during small rainfall events.

Wetland description

Soils in this ecological site are not part of wetland ecosystems.

Soil features

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

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

This site consists of deep, well drained, calcareous, alluvial soils on nearly level to gently sloping flood plains and valley floors. This site is frequently flooded to occasionally flooded during major rainfall events. The soils have dark colored silty loam, loam, or clay loam surfaces and subsurface layers. Permeability is moderate, and available water holding capacity is medium to high. The inherent fertility of these soils is high and the root zone is easily penetrated by plant roots. Production capacity is moderately high.

Representative soil components for this site include: Waka (some older soil surveys may include Bippus and Humbarger soils for this site).

Table 5. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Silt loam (2) Loam (3) Clay loam (4) Silty clay loam
Family particle size	(1) Fine-silty (2) Fine-loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	203 cm
Surface fragment cover <=3"	0–1%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	19.05–30.48 cm
Calcium carbonate equivalent (0-101.6cm)	2–5%
Electrical conductivity (0-101.6cm)	0–1 mmhos/cm

Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	2
Subsurface fragment volume <=3" (0-101.6cm)	0–1%
Subsurface fragment volume >3" (0-101.6cm)	0%

Ecological dynamics

The information contained in the State and Transition Diagram (STD) and the Ecological Site Description was developed using archeological and historical data, professional experience, and scientific studies. The information presented is representative of a very complex set of plant communities. Not all scenarios or plants are included. Key indicator plants, animals and ecological processes are described to inform land management decisions.

The reference plant community consists of a mixture of tall and midgrasses with lesser amounts of shortgrass species along with a respectable amount of forbs and scattered woody plants.

The productivity is fairly high due to a deep soil and extra runoff from adjacent upland sites. The main grass species are western wheatgrass (*Pascopyrum smithii*), vine mesquite (*Panicum obtusum*), sideoats grama (*Bouteloua curtipendula*), along with smaller compliments of switchgrass (*Panicum virgatum*) and Indiangrass (*Sorghastrum nutans*). There is always a component of blue grama (*Bouteloua gracilis*) and buffalograss (*Bouteloua dactyloides*) present but it is relatively small in the reference community. Some sites will have some alkali sacaton (*Sporobolus airoides*) present.

More commonly found forbs are goldenrod (Solidago spp.), Baldwin ironweed (*Vernonia baldwinii*), berlandiera (Berlandiera spp.), gaura (Gaura spp.), western ragweed (*Ambrosia psilostachya*), mallow (Sphaeralcea spp.), heath aster (*Chaetopappa ericoides*), sagewort (Artemisia spp.), Illinois bundleflower (*Desmanthus illinoensis*), Maximilian sunflower (Helianthus maximilianus) and numerous annuals. Scattered elm (Ulmus spp.), hackberry (Celtis spp.), western soapberry (*Sapindus saponaria*), and cottonwood (*Populus deltoides*) occur but these are not as prevalent as on loamy or wet bottomland sites. A few shrubs such as baccharis (Baccharis spp.), and occasional yucca (Yucca spp.) are present.

The significant presence of western wheatgrass makes this site preferred in the cool-season months as well as in the summer. At times there may be small holes of water present in the drainage channels. These holes provide a good source of water for wildlife and occasionally some plants such as curly dock (Rumex spp.) and smartweed (Polygonum spp.) may be found growing in wetter years. Since the site occupies a location lower on the landscape, animals prefer to take shelter from wind during the colder part of the year.

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.

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 buffalograss and blue grama. These shortgrasses can adapt better to grazing pressure. 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*) have become excessive and are competing strongly with perennials. 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 covered by grass, become deeper and

are sometimes devoid of cover.

Good grass cover and a variety of species make this site desirable for deer, turkey, and many ground nesting birds. Small mammals and predators such as coyotes and bobcats find the site attractive as well.

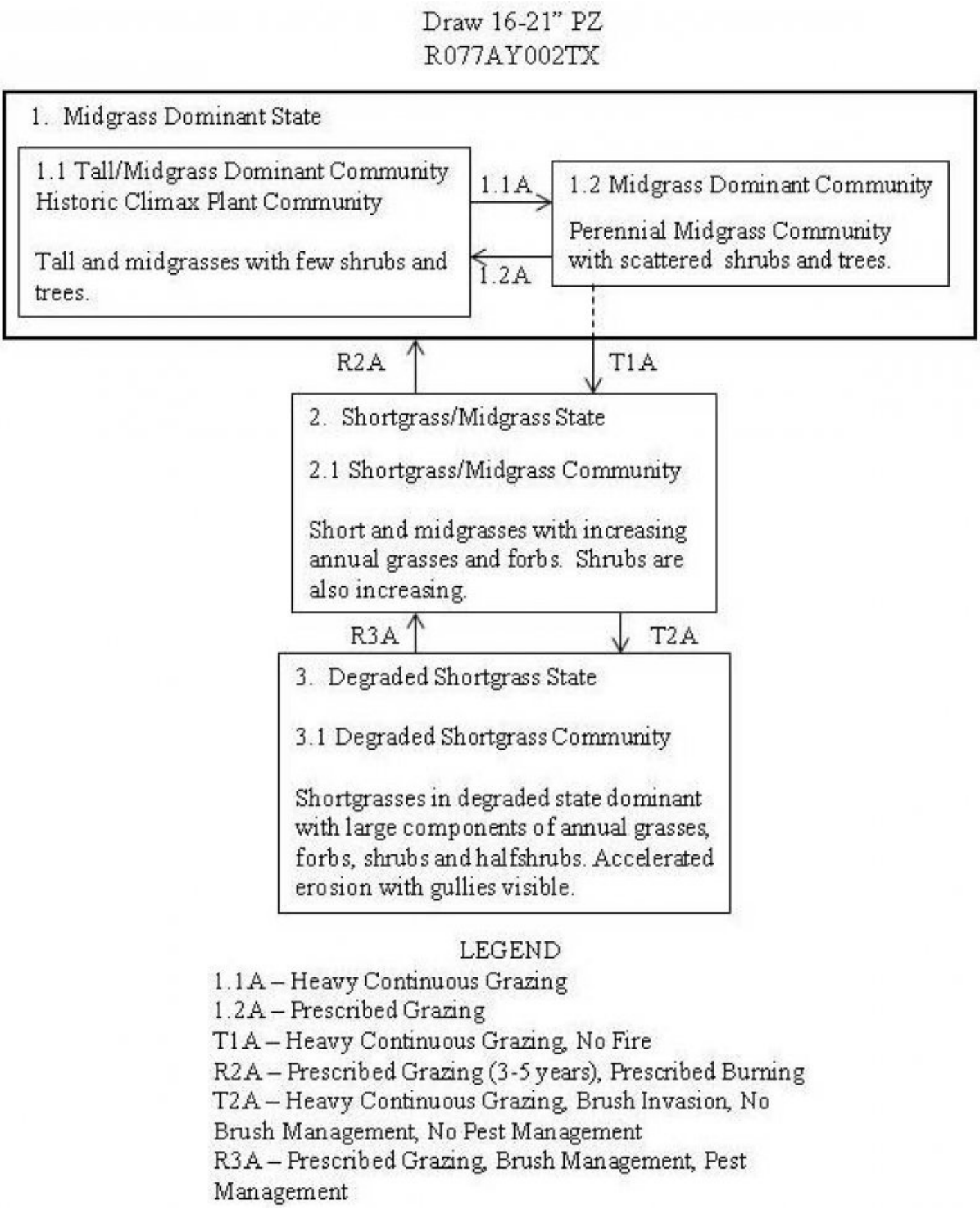
Poor cover and decreased plant diversity brought about by poor grazing management disrupt the natural processes such as the water cycle and nutrient cycle. Since the site receives runoff water from surrounding areas, good cover is essential to prevent gully and sheet erosion. The site has the capacity to store a good deal of water in the soil profile but poor vegetative cover inhibits this process. If little water enters the soil, then the taller grass species tend to do poorly. Opportunistic plants such as weedy forbs and annual grasses decrease the long-term stability of the site.

State and Transitional Pathways (Diagram):

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. Changes may occur slowly or fairly rapidly, depending on the type of events that effect change. At some point in time thresholds are crossed, which means that once changes in vegetative makeup have progressed to a certain point, the balance of the community has been altered. When this point is reached, a return to the former community state is generally not possible – unless some significant energy inputs are provided to induce a response in that direction. These changes in plant communities occur on all ecological sites with some being more resistant to changes than other sites. Some sites seem to be more resilient and are more easily restored to former vegetative states than are other sites. Usually, changes in grazing management alone, such as improvement in grazing techniques, will not be sufficient to induce the desired change in plant communities. An example of energy input that might be needed to induce change might be the implementation of chemical brush management and complete growing season rest in order to reduce the domination of woody shrubs and promote the dominance of perennial grasses and forbs. This action might have to be done more than once and might take some time. Such a vegetative shift would not be possible with grazing management alone. The amount of energy input needed to effect change depends on present vegetation and 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



State 1
Midgrass Dominant State

The Midgrass Dominant State consists of a reference plant community having a mixture of tall and midgrasses with lesser amounts of shortgrass species along with a respectable amount of forbs and scattered woody plants as well as a midgrass dominant community of perennial midgrass community with scattered shrubs and trees.

Dominant plant species

- switchgrass (*Panicum virgatum*), grass
- western wheatgrass (*Pascopyrum smithii*), grass

Community 1.1
Tall/Midgrass Community

Figure 8. 1.1 Tall/Midgrass Community

The interpretive plant community for this site is the reference plant community. This site consist of mid and tall perennial grasses with deep rooted perennial forbs and scattered woody shrubs and trees. Species found include: switchgrass, western wheatgrass, meadow dropseed, and vine mesquite with scattered cottonwood and elm.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2802	3363	4483
Forb	224	336	448
Tree	39	45	67
Shrub/Vine	22	67	67
Microbiotic Crusts	11	11	11
Total	**3098**	**3822**	**5076**

Figure 10. Plant community growth curve (percent production by month). TX0519, Tall/Midgrasses - cool and warm season. Mid and tall grasses dominate the site with both cool and warm season grasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	3	10	20	20	20	8	6	5	4	2	2

Community 1.2
Perennial Midgrass Community

Figure 11. 1.2 Perennial Midgrass Community

This plant community is midgrass dominant with the main species being western wheatgrass and vine mesquite. Midgrass dominant plants like vine mesquite and western wheatgrass with scattered remnants of tall grasses can be found in this plant community.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2074	3363	3923
Forb	67	168	224
Shrub/Vine	11	17	28
Tree	–	6	6
Microbiotic Crusts	6	6	6
Total	**2158**	**3560**	**4187**

Figure 13. Plant community growth curve (percent production by month). TX0520, Perennial Midgrass Community. Midgrass dominant. Western wheatgrass and vine mesquite are the dominant species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	3	9	19	24	19	5	4	7	6	3	1

Pathway 1.1A
Community 1.1 to 1.2

Tall/Midgrass Community

Perennial Midgrass Community

A plant community shift from a Tallgrass/Midgrass Dominant Community to a Midgrass Dominant Community can occur due to heavy continuous grazing pressure by livestock and wildlife.

Pathway 1.2A
Community 1.2 to 1.1

Perennial Midgrass Community

Tall/Midgrass Community

A plant community shift from a Midgrass Dominant Community to a Tallgrass/Midgrass Dominant Community can occur due to implementing prescribed grazing management practices for livestock and wildlife.

Conservation practices

Prescribed Grazing

State 2
Shortgrass/Midgrass State

This plant community is dominated by blue grama and buffalograss. There are a few pockets of western wheatgrass. False tarragon sagewort is beginning to increase. This plant community is overgrazed shortgrass dominant with a few half-shrubs and yucca invasion.

Dominant plant species

- buffalograss (*Bouteloua dactyloides*), grass
- sideoats grama (*Bouteloua curtipendula*), grass

Community 2.1
Shortgrass/Midgrass Community

Figure 14. 2.1 Shortgrass/Midgrass Community

This plant community is dominated by blue grama and buffalograss. There are a few pockets of western wheatgrass. False tarragon sagewort is beginning to increase. The hydrology of this site is negatively affected by the lack of cover and gully erosion is becoming more visible. This plant community is overgrazed shortgrass dominant with a few halfshrubs and yucca invasion. Low vigor – low production potential.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1121	1569	2242
Forb	56	84	146
Tree	–	17	28
Shrub/Vine	–	–	11
Microbiotic Crusts	6	6	11
Total	**1183**	**1676**	**2438**

Figure 16. Plant community growth curve (percent production by month). TX0521, Shortgrass Dominant with few midgrasses. Shortgrasses dominant with few midgrasses. Blue grama and buffalograss..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	3	5	30	30	8	4	8	6	3	1

State 3
Shortgrass State

The shortgrass species are in a degraded state with large components of annual grasses, forbs, shrubs, and half-shrubs. Erosion has been accelerated and gullies visible.

Dominant plant species

- buffalograss (*Bouteloua dactyloides*), shrub
- brome (*Bromus*), grass

Community 3.1
Degraded Shortgrass Community

Figure 17. 3.1 Degraded Shortgrass Community

This plant community consist of shortgrasses and annuals, surface erosion is evident. The hydrology is poor, erosion of channels banks occuring and production is poor. High percentage of bare ground.

Table 9. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	560	897	1345
Forb	56	112	168
Shrub/Vine	6	11	22
Tree	–	–	11
Microbiotic Crusts	–	–	–
Total	**622**	**1020**	**1546**

Figure 19. Plant community growth curve (percent production by month). TX0522, Degraded shortgrass and annual grasses.. Degraded shortgrasses with annual grasses and forbs..

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

Due to heavy continuous grazing and no fires, the Midgrass Dominant State transitions into a Shortgrass/Midgrass State.

Restoration pathway R2A
State 2 to 1

With the implementation of prescribed grazing (over a three to five year period) and prescribed burning conservation practices, the Shortgrass/Midgrass State can revert back to the Midgrass Dominant State.

Conservation practices

Prescribed Burning
Prescribed Grazing

Transition T2A
State 2 to 3

Many years of abusive grazing practices with stocking rates exceeding the carrying capacity can transition the site to the shortgrass dominated state.

Constraints to recovery. The vigor of the most palatable grasses has declined and the sodbound shortgrasses remain. Recovery of this state, if possible, may take many years.

Restoration pathway R3A
State 3 to 2

With the implementation of prescribed grazing, brush management, and prescribed burning conservation practices, the Degraded Shortgrass State can be reverted into the Shortgrass/Midgrass State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Additional community tables

Table 10. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Cool Season Grasses**			1659–2651	
	western wheatgrass	PASM	*Pascopyrum smithii*	1401–2242	–
	Canada wildrye	ELCA4	*Elymus canadensis*	191–291	–
	Texas bluegrass	POAR	*Poa arachnifera*	67–118	–
2	**Tallgrasses**			745–1194	
	vine mesquite	PAOB	*Panicum obtusum*	560–897	–
	switchgrass	PAVI2	*Panicum virgatum*	90–146	–
	Indiangrass	SONU2	*Sorghastrum nutans*	90–146	–
	eastern gamagrass	TRDA3	*Tripsacum dactyloides*	90–146	–
3	**Warm Season Midgrasses**			420–673	
	alkali sacaton	SPAI	*Sporobolus airoides*	179–291	–
	composite dropseed	SPCOC2	*Sporobolus compositus var. compositus*	90–151	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	90–146	–
	blue grama	BOGR2	*Bouteloua gracilis*	45–73	–
4	**Lower Midgrasses**			157–252	
	buffalograss	BODA2	*Bouteloua dactyloides*	34–62	–
	saltgrass	DISP	*Distichlis spicata*	34–62	–
	creeping muhly	MURE	*Muhlenbergia repens*	34–62	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	22–39	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	22–39	–
5	**Annuals**			45–67	
	brome	BROMU	*Bromus*	45–67	–
Forb					
6	**Forbs**			168–336	
	Forb, annual	2FA	*Forb, annual*	0–112	–
	sagebrush	ARTEM	*Artemisia*	0–56	–
	aster	ASTER	*Aster*	0–56	–
	bundleflower	DESMA	*Desmanthus*	0–56	–
	Engelmann's daisy	ENGEL	*Engelmannia*	0–56	–
	beeblossom	GAURA	*Gaura*	0–56	–
	American licorice	GLLE3	*Glycyrrhiza lepidota*	0–56	–
	curlycup gumweed	GRSQ	*Grindelia squarrosa*	0–56	–
	swamp sunflower	HEAN2	*Helianthus angustifolius*	0–56	–
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	0–56	–
	slimflower scurfpea	PSTE5	*Psoralidium tenuiflorum*	0–56	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–56	–
	Baldwin's ironweed	VEBA	*Vernonia baldwinii*	0–56	–

	hoary verbena	VEST	*Verbena stricta*	0–56	–
Shrub/Vine					
7	**Shrubs**			67–112	
	saltwater false willow	BAAN	*Baccharis angustifolia*	13–22	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	13–22	–
	Oklahoma plum	PRGR	*Prunus gracilis*	13–22	–
	willow	SALIX	*Salix*	13–22	–
	soapweed yucca	YUGL	*Yucca glauca*	13–22	–
Tree					
8	**Trees**			45–112	
	hackberry	CELTI	*Celtis*	11–28	–
	eastern cottonwood	PODE3	*Populus deltoides*	11–28	–
	western soapberry	SASAD	*Sapindus saponaria var. drummondii*	11–28	–
	American elm	ULAM	*Ulmus americana*	11–28	–

Animal community

This 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 times not. Pronghorn use the site especially when forb growth is prolific.

Dove and quail will use the site for nesting and escape cover. The site lacks shrubby cover for quail but if water holes are available, mourning doves will frequent the site in late summer and early fall.

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, Horseback riding

Wood products

None

Other products

None

Other information

Along these draws throughout the plains, significant archeological sites exist. Early native Americans often camped along these draws and hunted game that grazed and watered there.

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.

Other references

J.R. Bell , USDA-NRCS Rangeland Management Specialist (retired)
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Texas A&M Exp. Station, College Station, Texas
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Approval

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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.

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Date	05/13/2005
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 surface erosion

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Loam to clay loam friable surfaces, and 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 midgrasses > warm season midgrasses > warm season tallgrasses>

    Sub-dominant: forbs > shrubs = trees

Other:

Additional:

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

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14. **Average percent litter cover (%) and depth (in):**

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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.
