

Ecological site R077DY049TX Very Shallow 12-17" PZ

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Accessed: 05/08/2024

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.

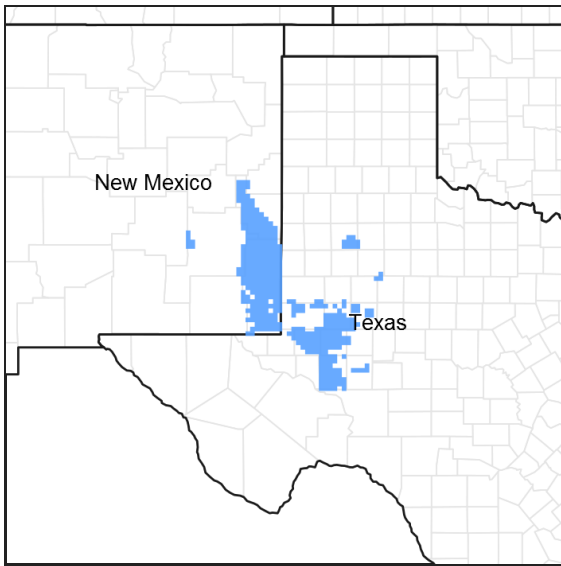


Figure 1. Mapped extent

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): 077D–Southern High Plains, Southwestern Part

This MLRA 77D is characterized by nearly level to gently undulating plains with scattered playa depressions. Soil temperature regime is thermic and soil moisture regime is aridic bordering on ustic. Sandy and loamy soils are generally well drained and range from shallow to deep and medium- to coarse-textured. Native vegetation is short- to midgrasses and sandy sites support tallgrasses with sand shin oak and mesquite. Current land use is mainly rangeland, although irrigated cropland is expanding.

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 very shallow soils on uplands. The reference vegetation consists of shortgrasses with some midgrasses and forbs. Woody species are rarely present in the reference plant community. Abusive grazing practices may lead to a decrease in palatable plants and a shift in the plant community. Woody species may increase in the absence of periodic fire.

Associated sites

R077DY042TX	<p>Limy Upland 12-17" PZ</p> <p>Very shallow sites can be found adjacent to Limy Upland sites, MLRA 77D. The Limy Upland sites will occur as gently undulating soils that occur on broad upland plains. Midgrasses dominate but there is a good mixture of shortgrasses on this site. Production is higher on the Limy Upland sites.</p>
R077DY047TX	<p>Sandy Loam 12-17" PZ</p> <p>Sandy Loam sites, MLRA 77D, can be found adjacent to Very Shallow sites as deeper soils on nearly level plains. Midgrasses dominate but some tallgrasses and shortgrasses can occur on this site. Production is higher on Sandy Loam sites.</p>
R077DY048TX	<p>Shallow 12-17" PZ</p> <p>Shallow sites, MLRA 77D, can be found adjacent to Very Shallow sites as slightly deeper soils on nearly level plains. Midgrasses dominate but a good mixture of shortgrasses occurs on this site. Production is similar between Shallow and Very Shallow sites.</p>
R077DY046TX	<p>Sandy 12-17" PZ</p> <p>Sandy sites, MLRA 77D, can be found adjacent to Very Shallow sites as deeper soils on nearly level plains. Midgrasses dominate but there is a good mixture of tallgrasses on this site. Production is similar on the Sandy sites.</p>

Similar sites

R077DY048TX	<p>Shallow 12-17" PZ</p> <p>Shallow sites, MLRA 77D, will have slightly deeper soils on nearly level plains. Shallow sites have similar vegetation with slightly higher production potential.</p>
R077CY037TX	<p>Very Shallow 16-21" PZ</p> <p>Very Shallow sites, MLRA 77C, have similar forage plant communities with higher production potential due to higher annual precipitation (16 - 21 inches).</p>
R077EY068TX	<p>Very Shallow 16-24" PZ</p> <p>Very Shallow sites, MLRA 77E, have similar forage plant communities with higher production potential due to higher annual precipitation (16 - 24 inches).</p>

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Ephedra</i> (2) <i>Acacia greggii</i>
Herbaceous	(1) <i>Bouteloua eriopoda</i> (2) <i>Bouteloua gracilis</i>

Physiographic features

Soils correlated in the MLRA 77D Very Shallow ecological site are very shallow to shallow to a petrocalcic horizon. They were formed in moderately fine textured eolian sediments of the Blackwater Draw Formation of Pleistocene age. These soils are typically on gently sloping plains, narrow ridges, and side slopes along draws. Slope ranges from 0 to 3 percent.

Landforms include Plain, Ridge, and Playa rims.

Table 2. Representative physiographic features

Landforms	(1) Plateau > Plain (2) Plateau > Playa rim (3) Plateau > Ridge
Runoff class	Medium to high
Flooding frequency	None

Ponding frequency	None
Elevation	762–1,402 m
Slope	0–3%
Water table depth	203 cm
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

Continental Steppe climate is prevalent in MLRA 77D. This climate type is typical of interiors of continents and is characterized by large variations in the magnitude of ranges in daily temperature extremes, low relative humidity, and irregularly spaced rainfall of moderate amounts. This climate regime is also known for being semi-arid with mild winters.

Droughts occur with monotonous frequency although there will be years having excessive precipitation resulting in large accumulations of water that little benefit is obtained from the rainfall events. If good rains occur in the spring and summer months, annual production will be favorable even if the remainder of the year is not favorable. Most of the annual precipitation occurs as a result from spring and early summer thunderstorms. Due to the fact that the area is mainly flat, local flooding may occur but only of short duration. There is very little precipitation and infrequent snowfall amounts in the winter.

During the late winter and early spring months, dust storms occur very frequently. The flat plains of the area contribute very little resistance to the strong winds. Dust in many of these storms remains in the air for several days after the storms have passed.

Daytime temperatures are warm in the summer but there is a large diurnal range and most nights are comfortable. In summers, the normal daily maximum temperatures are in the low to mid 90s and the normal minimum temperatures are in the upper 60s and low 70s. Even though the temperatures may be high, the low humidity and high evaporation rates create a cooling effect during the nighttime hours. Fall months exhibit extremely variable weather. Winters are mild and are characterized by frequent cold fronts accompanied by strong, gusty, northerly winds. Most of the cold fronts are dry as they pass through the area.

Table 3. Representative climatic features

Frost-free period (characteristic range)	154-191 days
Freeze-free period (characteristic range)	181-194 days
Precipitation total (characteristic range)	381-432 mm
Frost-free period (actual range)	147-195 days
Freeze-free period (actual range)	171-213 days
Precipitation total (actual range)	381-432 mm
Frost-free period (average)	167 days
Freeze-free period (average)	190 days
Precipitation total (average)	406 mm

Climate stations used

- (1) MELROSE [USC00295617], Melrose, NM
- (2) ELIDA [USC00292854], Elida, NM
- (3) CROSSROADS 2 [USC00292207], Crossroads, NM
- (4) CAPROCK [USC00291445], Caprock, NM
- (5) TATUM [USC00298713], Tatum, NM
- (6) HOBBS 13W [USC00294030], Lovington, NM
- (7) ANDREWS [USC00410248], Andrews, TX

- (8) ODESSA SCHLEMEYER FLD [USW00003031], Odessa, TX
- (9) K-BAR RCH [USC00414710], Odessa, TX

Influencing water features

Water features are not an influencing factor in this site.

Wetland description

None.

Soil features

The soils of this site are very shallow, well drained, calcareous, gravelly soils. Permeability is moderate and runoff is low to medium. Parent material is a thin mantle of medium to moderately coarse textured eolian sediments over an indurated layer.

Major Soil Taxonomic Units correlated to this site include: Eunice soils, Kimbrough soils, Simona soils and Spraberry soils.

Table 4. Representative soil features

Parent material	(1) Eolian deposits—igneous, metamorphic and sedimentary rock
Surface texture	(1) Loam (2) Gravelly loam (3) Fine sandy loam (4) Loamy fine sand
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to rapid
Depth to restrictive layer	10–51 cm
Soil depth	10–51 cm
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0–10%
Available water capacity (0-50.8cm)	1.27–5.08 cm
Calcium carbonate equivalent (0-50.8cm)	0–60%
Electrical conductivity (0-50.8cm)	0–1 mmhos/cm
Sodium adsorption ratio (0-50.8cm)	0–1
Soil reaction (1:1 water) (0-50.8cm)	6.6–8.4
Subsurface fragment volume <=3" (0-50.8cm)	0–60%
Subsurface fragment volume >3" (0-50.8cm)	0–3%

Ecological dynamics

The Reference Plant Community of the Very Shallow Ecological Site is a Shortgrass/Midgrass Community (1.1). Few if any tallgrass species will be found. Grass species account for 85 percent of the total site production. A wide

variety of forbs are produced on this site producing 15 percent of the total annual production. Only trace amounts of woody shrubs will be found. This site occupies flat to moderately sloping upland areas. Slopes typically range from 1 to 12 percent. These are shallow to very shallow loam to fine sandy loam soils with a depth of 4 to 20 inches that are underlain by indurated caliche or soft caliche.

The dominant shortgrass species are black grama (*Bouteloua eriopoda*) and blue grama (*Bouteloua gracilis*), with lesser amounts of buffalograss (*Bouteloua dactyloides*), Wright threeawn (*Aristida wrightii*), hairy grama (*Bouteloua hirsuta*), and fall witchgrass (*Digitaria cognata*). The dominant midgrass species are sideoats grama (*Bouteloua curtipendula*), little bluestem (*Schizachyrium scoparium*), plains bristlegrass (*Setaria macrostachya*), Arizona cottontop (*Digitaria californica*), tobosagrass (*Pleuraphis mutica*), slim tridens (*Tridens muticus*), and lesser amounts of sand dropseed (*Sporobolus cryptandrus*) and Reverchon bristlegrass (*Setaria reverchonii*). A good variety of forbs exist but the amount varies greatly from year to year depending on moisture. The more commonly found forbs are dotted gayfeather (*Liatris punctata*), white prairie clover (*Dalea albiflora*), gaura spp. (*Gaura* spp.), bush sunflower (*Simsia calva*), orange zexmania (*Zexmania hispida*), trailing ratany (*Krameria lanceolata*), *Oenothera* spp. (*Oenothera* spp.), and rock daisy (*Perityle* spp.). The few shrubs that may be found on this site were feather dalea (*Dalea Formosa*), catclaw acacia (*Acacia greggii*), and vine ephedra (*Ephedra antisyphilitica*).

Fire plays a role in the ecology of this site as well as most other high plains sites. The general role of fire is to sustain the natural grassland and suppress shrubby species. Fire has helped to keep a balance between the grasses, forbs and shrubs. However, in the shortgrass region, fire is probably secondary to climate in promoting the historic vegetative state. A drier climate (<20 inches annual precipitation) creates a situation where the subsoil is dry more often than it is wet. Plant roots grow in response to moisture and this dryer climate favors shortgrasses with fibrous root systems or short rhizomatous grasses. Annual forbs are stimulated by fire and diversity is generally increased. Heavy grazing after a fire can have a negative effect if conditions are dry and remain so for an extended period.

Periodic grazing and trampling by migrating herds of bison and elk as well as resident herds of pronghorn antelope occurred during drought periods. Bison moved about in large herds over the region somewhat regulated by water sources and fire frequency. However, long rest periods followed once the large herds of bison moved out of the area, allowing the resilient grassland to re-establish and maintain its structure.

Variations in climatic factors, especially the amount and timing of precipitation, greatly influence the productivity of ecological sites and are largely responsible for the fluctuations in the amount of vegetative growth from one season to the next. It is not unusual for fluctuations of greater than 50 percent to occur from one year to another. These types of climatic variation are part of the overall environment in which the reference plant community developed. However, it needs to be pointed out that long-term drought (4 to 6 years of rainfall, 50 percent below the mean) can act in concert with other forces to affect changes in plant communities. For instance, extended drought weakens plants and makes them more susceptible to the effects of overgrazing. Drought conditions coupled with fire can be damaging and need long periods of time to fully recover. Extremely dry summers followed by wet winters can favor cool-season annual grasses at the expense of perennial warm-season species. A well-adapted, healthy community could better withstand such rigors of drought. However, even the reference community can experience damage that would result in some departure from the former stable state. Usually, the departure would be temporary.

When domestic livestock were brought to the plains in the 1870's, it was largely an open range situation. By 1890, however, most of the area had been fenced and livestock were confined to these areas continually. Not understanding the limits of rangeland productivity, European settlers almost universally overstocked the area with domesticated livestock. As overgrazing occurred on this site, there was a reduction of the less grazing resistant midgrass species, a decline in mulch and organic matter, and consequently a reduction in intensity and frequency of fires. The shift in plant cover to less palatable shortgrass species and the decline in soil cover, favors woody plant encroachment.

With abusive grazing, no fire, no brush management and/or pest management this site will transition to the Shortgrass/Shrub Community (1.2). 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. The tendency of this site is to become a shortgrass dominant site if long-term grazing abuse occurs. This will lead to a decline in sideoats grama, blue grama and other palatable grass species. Black grama, dropseeds and tobosa will increase with an increase of hairy tridens (*Erioneuron pilosum*), and burrograss (*Scleropogon brevifolius*). Catclaw acacia will increase along with an invasion of broom snakeweed (*Gutierrezia*

sarothrae), and mesquite (*Prosopis glandulosa*). The production of vegetation has shifted from mostly herbaceous vegetation to increasing amounts of woody shrubs. Herbaceous vegetation is still the largest production in this state. Nutrient cycling, the water cycle, watershed protection and biological functions have changed somewhat. This state can transition back to reference with good management practices such as prescribed grazing, brush management and pest management. In this state it is unlikely that prescribed burning could be used due to the limited fuel load and poor continuity to carry a fire.

If long-term, abusive grazing continues with no fire or any form of brush and pest management, a major threshold will be crossed to the Shrub/Shortgrass Community (2.1). In this state, mesquite, broom snakeweed and catclaw acacia will dominate the site. The typical shortgrass species will be perennial threeawns, hairy tridens and other invading low quality short grasses. Bare areas will increase with annuals filling the voids.

The loss of herbaceous cover and increased bare soil 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. Prescribed grazing with rest periods during the growing season, re-seeding with adapted native grass species, chemical and/or mechanical brush management, and some form of pest management will be required to return this state back to reference. With the reduced amounts of grass fuel, poor continuity and increased bare soil, prescribed burning will not be an option in this state.

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.

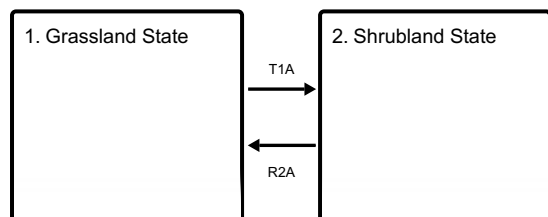
STATE AND TRANSITIONAL PATHWAYS: (DIAGRAM)

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.

State and transition model

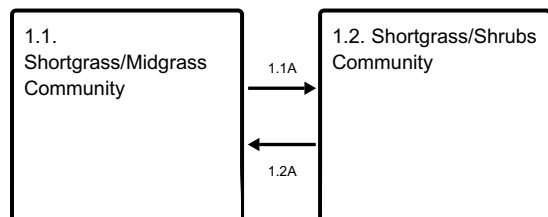
Ecosystem states



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

State 1 submodel, plant communities



State 2 submodel, plant communities

2.1. Shrub/Shortgrass
Community

State 1 Grassland State

The Reference Plant Community was a Shortgrass/Midgrass Community (1.1). Few if any tallgrass species will be found. Grass species account for 85 percent of the total site production. A wide variety of forbs are produced on this site producing 15 percent of the total annual production and only trace amounts of woody shrubs will be found. With continuous heavy grazing, no fire, no brush management and/or pest management this site will transition to the Shortgrass/Shrub Community (1.2). 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. The tendency of this site is to become a shortgrass dominant site if long-term grazing abuse occurs. This will lead to a decline in sideoats grama, blue grama and other palatable grass species.

Dominant plant species

- black grama (*Bouteloua eriopoda*), grass
- blue grama (*Bouteloua gracilis*), grass

Community 1.1 Shortgrass/Midgrass Community



Figure 8. 1.1 Shortgrass/Midgrass Community

The Reference Plant Community of the Very Shallow Ecological Site is a Shortgrass/Midgrass Plant Community (1.1). Few if any tallgrass species will be found. Grass species account for 85 percent of the total site production. A wide variety of forbs are produced on this site producing 15 percent of the total annual production. Only trace amounts of woody shrubs will be found. The dominant shortgrass species are black grama and blue grama. Sideoats grama is the primary midgrass species. As overgrazing occurs on this site, there will be a reduction of the less grazing resistant midgrass species, a decline in mulch and organic matter, and consequently a reduction in intensity and frequency of fires. The shift in plant cover to less palatable shortgrass species and the decline in soil cover, favors woody plant encroachment. Proper grazing use, periodic brush and pest management and prescribed burning are required to maintain this community phase.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	319	693	1065
Forb	17	36	56
Shrub/Vine	–	–	1
Tree	–	–	–
Microbiotic Crusts	–	–	–
Total	336	729	1122

Figure 10. Plant community growth curve (percent production by month). TX1251, Warm-season bunchgrasses w/ forbs & shrubs. Warm-season bunchgrasses with forbs and shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	5	12	16	15	20	18	9	1	0

Community 1.2 Shortgrass/Shrubs Community



Figure 11. 1.2 Shortgrass/Shrubs Community

With continuous heavy grazing, no fire, no brush management and/or pest management this site will transition from to the Shortgrass/Shrub Community (1.2). 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. The tendency of this site is to become a shortgrass dominant site if long-term grazing abuse occurs. This will lead to a decline in sideoats grama, blue grama and other palatable grass species. Black grama, dropseeds and tobosa will increase with an invasion of hairy tridens, and burrograss. Catclaw acacia will increase along with an invasion of broom snakeweed, and mesquite. The production of vegetation has shifted from mostly herbaceous vegetation to increasing amounts of woody shrubs. Herbaceous vegetation is still the largest production in this state. This state can shift back to the reference community with good management practices such as prescribed grazing, brush management and pest management. In this state it is unlikely that prescribed burning could be used due to the limited fuel load and poor continuity to carry a fire.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	224	392	560
Shrub/Vine	224	336	448
Forb	45	78	112
Microbiotic Crusts	–	–	–
Tree	–	–	–
Total	493	806	1120

Figure 13. Plant community growth curve (percent production by month). TX1252, Shortgrass Dominant/Invading Shrub Community. Warm-season shortgrasses with increasing shrubs and forbs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	5	12	16	15	20	18	9	1	0

Pathway 1.1A Community 1.1 to 1.2



Shortgrass/Midgrass
Community



Shortgrass/Shrubs
Community

With continuous heavy grazing, no fire, no brush management and/or pest management this site will transition to the Shortgrass/Shrub Community (1.2). 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.

Pathway 1.2A Community 1.2 to 1.1



Shortgrass/Shrubs
Community



Shortgrass/Midgrass
Community

This state can transition back the reference community with good management practices such as prescribed grazing, brush management and pest management.

Conservation practices

Brush Management
Integrated Pest Management (IPM)
Prescribed Grazing

State 2 Shrubland State

A major threshold will be crossed from the Grassland State (1.0) to the Shrubland State (2.0). In this state, mesquite, shrubs such as broom snakeweed and catclaw acacia will dominate the site. The typical shortgrass

species will be perennial threeawns, hairy tridens and other invading low quality short grasses. Bare areas will increase with annuals filling the voids. The loss of herbaceous cover and increased bare soil encourages accelerated erosion, especially on sites with steeper slopes.

Dominant plant species

- broom snakeweed (*Gutierrezia sarothrae*), shrub
- catclaw acacia (*Acacia greggii*), shrub
- honey mesquite (*Prosopis glandulosa*), shrub

Community 2.1 Shrub/Shortgrass Community



Figure 14. 2.1 Shrub/Shortgrass Community

If long-term, heavy grazing continues with no fire or any form of brush and pest management, a major threshold will be crossed to the Shrub/Shortgrass Community (2.1). In this state, mesquite, broom snakeweed and catclaw acacia will dominate the site. The typical shortgrass species will be perennial threeawns, hairy tridens and other invading low quality short grasses. Bare areas will increase with annuals filling the voids. The loss of herbaceous cover and increased bare soil encourages accelerated erosion, especially on sites with steeper slopes. 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. Prescribed grazing with rest periods during the growing season, re-seeding with adapted native grass species, chemical and/or mechanical brush management, and some form of pest management will be required to return this state back to the reference state. With the reduced amounts of grass fuel, poor continuity and increased bare soil, prescribed burning will not be an option in this state.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	448	560	673
Grass/Grasslike	112	224	336
Forb	22	45	67
Microbiotic Crusts	–	–	–
Tree	–	–	–
Total	582	829	1076

Figure 16. Plant community growth curve (percent production by month). TX1254, Shrub/Shortgrass/Annuals Community. Spring and fall growth of shortgrasses, annuals, and shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	4	6	10	16	15	20	15	12	1	0

Transition T1A

State 1 to 2

If long-term, heavy grazing continues with no fire or any form of brush and pest management, a major threshold will be crossed to the Shrub/Shortgrass Community (2.1). In this state, mesquite, broom snakeweed and catclaw acacia will dominate the site. Bare areas will increase with annuals filling the voids.

Restoration pathway R2A

State 2 to 1

Prescribed grazing with rest periods during the growing season, re-seeding with adapted native grass species, chemical and/or mechanical brush management, and some form of pest management will be required to return this state back the reference. With the reduced amounts of grass fuel, poor continuity and increased bare soil, prescribed burning will not be an option in this state.

Conservation practices

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

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	Shortgrasses			118–392	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	84–280	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	34–112	–
2	Midgrasses			151–504	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	34–112	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	34–112	–
	large-spike bristlegrass	SEMA5	<i>Setaria macrostachya</i>	17–56	–
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	17–56	–
	tobosagrass	PLMU3	<i>Pleuraphis mutica</i>	17–56	–
	slim tridens	TRMUE	<i>Tridens muticus var. elongatus</i>	17–56	–
	Reverchon's bristlegrass	SERE3	<i>Setaria reverchonii</i>	9–28	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	8–28	–
3	Shortgrasses			50–168	
	Wright's threeawn	ARPUW	<i>Aristida purpurea var. wrightii</i>	17–56	–
	buffalograss	BODA2	<i>Bouteloua dactyloides</i>	17–56	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	9–28	–
	fall witchgrass	DICO6	<i>Digitaria cognata</i>	8–28	–
Forb					
4	Forbs			56–112	
	dotted blazing star	LIPU	<i>Liatris punctata</i>	9–18	–
	evening primrose	OENOT	<i>Oenothera</i>	7–13	–
	rockdaisy	PERIT	<i>Perityle</i>	7–13	–
	awnless bushsunflower	SICA7	<i>Simsia calva</i>	7–13	–
	whiteflower prairie clover	DAAL	<i>Dalea albiflora</i>	7–13	–
	beeblossom	GAURA	<i>Gaura</i>	7–13	–
	trailing krameria	KRLA	<i>Krameria lanceolata</i>	7–13	–
Shrub/Vine					
5	Shrubs			0–1	
	catclaw acacia	ACGRG3	<i>Acacia greggii var. greggii</i>	0–1	–
	featherplume	DAFO	<i>Dalea formosa</i>	0–1	–
	clapweed	EPAN	<i>Ephedra antisyphilitica</i>	0–1	–

Animal community

This site is inhabited by dove, quail, deer and pronghorn. Limited populations of pronghorn antelope frequent the site. The limited amount of woody plants does not provide good cover and food sources for deer.

Hydrological functions

Surface runoff is moderate to rapid on these soils due to the percent slope. Water erosion is slight where the vegetative cover is good, but overgrazed areas are subject to severe water erosion hazards.

Recreational uses

This site has very little value from an aesthetic standpoint. The site is occupied almost exclusively by native short

and midgrass species with few woody shrubs. Recreational activities could include bird hunting, camping, hiking, bird watching, photography, and 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.

Inventory Data References (documents):

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

Hatch, Brown and Ghandi, Vascular Plants of Texas (An Ecological Checklist)

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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.

Mark Moseley, RMS, NRCS, Boerne, Texas

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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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Date	02/09/2010
Approved by	Bryan Christensen
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Due to percent slopes, rills will be common.

2. **Presence of water flow patterns:** Due to percent slopes, water flow patterns will be common.

3. **Number and height of erosional pedestals or terracettes:** Due to percent slopes, pedestals/terraces will be common.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 25-30% mineral soil, low percentage due to rock fragments scattered throughout the soil profile.

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

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

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

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

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Loamy friable surface; low SOM.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low vegetative cover and percent slopes make this site susceptible to erosion. This site is a moderately permeable soil, runoff is medium and available water holding capacity is very low.
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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.
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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 shortgrasses > Warm-season midgrasses >>
- Sub-dominant:
- Other: Forbs > Shrubs/Vines
- 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):** 300 to 1,000 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:** Catclaw acacia, broom snakeweed, and mesquite 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.
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