Ecological site R083AY027TX
Western Clay Loam

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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.

MLRA notes

Major Land Resource Area (MLRA): 083A–Northern Rio Grande Plain

This area is entirely in Texas and south of San Antonio. It makes up about 11,115 square miles (28,805 square kilometers). The towns of Uvalde, Cotulla, and Hondo are in the western part of the area, and Beeville, Goliad, and Kenedy are in the eastern part. The town of Alice is just outside the southern edge of the area. Interstate Highways 35 and 37 cross this area. This area is comprised of inland, dissected coastal plains.

Classification relationships

USDA-Natural Resources Conservation Service, 2006. -Major Land Resource Area (MLRA) 83A

Ecological site concept

The Clay Loam ecological site has deep to very deep clay loam soils and has high vegetative production. The Eastern Clay Loams are more productive than the Western Clay Loam sites, with the separation line occurring in Atascosa County.

Associated sites

R083AY003TX	**Gravelly Ridge**
R083AY005TX	**Shallow**
R083AY013TX	**Loamy Bottomland**
R083AY008TX	**Salty Prairie**
R083AY011TX	**Claypan Prairie**
R083AY012TX	**Loamy Draw**

R083AY016TX	**Saline Clay Loam**

Similar sites

R083CY025TX	**Clay Loam**
R083DY025TX	**Clay Loam**
R083BY025TX	**Clay Loam**

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Schizachyrium scoparium* (2) *Bothriochloa barbinodis*

Physiographic features

The Clay Loam ecological site is made of loamy soils formed from calcareous loamy alluvium. These nearly level to gently sloping soils are on stream terraces on coastal plains. Slope gradients are dominantly 0 to 2 percent but range up to 5 percent. Elevation ranges from 200 to 1,000 feet. This area is comprised of inland, dissected coastal plains.

Table 2. Representative physiographic features

Landforms	(1) Coastal plain > Stream terrace (2) Coastal plain > Interfluve
Runoff class	Negligible to medium
Flooding frequency	None
Ponding frequency	None
Elevation	60 – 310 m
Slope	0 – 10 %

Aspect	Aspect is not a significant factor

Climatic features

MLRA 83A is subtropical, subhumid on the western boundary and subtropical humid on the eastern boundary. Winters are dry and mild and the summers are hot and humid. Tropical maritime air masses predominate throughout spring, summer, and fall. Modified polar air masses exert considerable influence during winter, creating a continental climate characterized by large variations in temperature. Average precipitation for MLRA 83A is 20 inches on the western boundary and 35 inches on the eastern boundary. Peak rainfall, because of rain showers, occurs late in spring and a secondary peak occurs early in fall. Heavy thunderstorm activities increase in April, May, and June. July is hot and dry with little weather variations. Rainfall increases again in late August and September as tropical disturbances increase and become more frequent. Tropical air masses from the Gulf of Mexico dominate during the spring, summer, and fall. Prevailing winds are southerly to southeasterly throughout the year except in December when winds are predominately northerly.

Table 3 Representative climatic features

Frost-free period (characteristic range)	230-250 days
Freeze-free period (characteristic range)	260-370 days
Precipitation total (characteristic range)	640-740 mm
Frost-free period (actual range)	210-260 days
Freeze-free period (actual range)	260-370 days
Precipitation total (actual range)	560-760 mm
Frost-free period (average)	240 days
Freeze-free period (average)	310 days
Precipitation total (average)	660 mm

- (1) CARRIZO SPRINGS 3W [USC00411486], Carrizo Springs, TX
- (2) HONDO [USC00414254], Hondo, TX
- (3) MATHIS 4 SSW [USC00415661], Mathis, TX
- (4) UVALDE 3 SW [USC00419268], Uvalde, TX
- (5) CHARLOTTE 5 NNW [USC00411663], Charlotte, TX
- (6) FOWLERTON [USC00413299], Fowlerton, TX
- (7) PEARSALL [USC00416879], Pearsall, TX
- (8) POTEET [USC00417215], Poteet, TX
- (9) LYTLE 3W [USC00415454], Natalia, TX
- (10) HONDO MUNI AP [USW00012962], Hondo, TX
- (11) DILLEY [USC00412458], Dilley, TX

Influencing water features

Water features does not influence this site.

Wetland description

N/A

Soil features

This site consists of deep and very deep, well drained, moderate to moderately slow permeable soils. Reaction is neutral to moderately alkaline. A typical profile will include a calcic horizon originating between 10 inches and 24 inches of depth. The soil moisture regime is ustic bordering on aridic. Soil series correlated to this site include: Amphion, Bookout, Caid, Castroville, Chacon, Hanis, Sabenyo, Uvalde, and Zavco.

Table 4. Representative soil features

Parent material	(1) Alluvium – sedimentary rock (2) Residuum – sedimentary rock
Surface texture	(1) Clay loam (2) Silty clay loam (3) Sandy clay loam
Family particle size	(1) Fine (2) Fine-loamy (3) Fine-silty
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	10.16 – 17.78 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 30 %

Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The plant communities that can be found on this site range from a midgrass dominant to a brush-covered site with bare ground. This diversity in plant communities is in direct response to grazing management, fire, and drought. The reference plant community was composed of predominantly midgrasses such as false Rhodesgrass (Chloris crinita), multi-flower false Rhodesgrass (Chloris pluriflora), little bluestem (Schizachyrium scoparium), Arizona cottontop (Digitaria californica), feathery bluestems (Andropogon ternarius), pink pappusgrass (Pappophorum bicolor), and sideoats grama (Bouteloua curtipendula), with a small percentage of woodies such as mesquite (Prosopis glandulosa), whitebrush (Aloysia gratissima), Condalias (Condalia spp.), and wolfberry (Lycium carolinianum), and numerous perennial forbs. The reference community was maintained by periodic grazing by roaming herds of wildlife and numerous fires that were set by lightning and the Native Americans. The site was very productive and maintained a high percentage of ground cover with high fertility. Runoff of rainfall was slow, allowing the soil profile to fill to capacity.

In the reference plant community, the midgrasses dominated the shortgrasses due to their ability to capture the sunlight and shade the shorter grasses. The midgrasses also had deeper root systems that allowed them to retain the deep moisture while the shortgrasses had shorter root systems and could capture only the shallow moisture. Many of the deep-rooted grasses also have more root hairs that allow them to be more efficient at extracting moisture from very dry soil. Due to these differences, the midgrasses maintained their dominance over the shortgrasses as they could produce much more food and maintain a high state of health and vigor even in times of drought.

Fire occurred on a regular basis and burned anytime the grass was abundant and dry and there was an ignition source. These fires burned for days as there was nothing but rivers or denuded low producing ecological sites to stop them. They arrested the woody component to a small percentage of the total production, as well as canopy. These fires assisted in maintaining a good component of perennial forbs on the site by opening the ground cover to allow their establishment and regeneration and breaking the dormancy of some seeds.

The natural graze-rest cycles were broken by continuous grazing and the stocking rates exceeded the carrying capacity of the land with settlement. Historical accounts identify grazing by herds of wild horses, followed by heavy sheep and cattle grazing as settlement progressed. Previously grazing was limited only to antelope, deer, and the occasional and irregular small herd of bison. The midgrasses were grazed to the point that they could no longer produce enough food in their leaves to maintain health and vigor. All available food produced was going to grow more leaf area to enhance the food manufacturing process at the expense of the root system. Sustained overgrazing caused the root system to shrink, as respiration required energy. In time, the midgrasses would become a very shallow rooted, small leaf area, weak plant that was set up for doom during the next drought. Under these circumstances, the midgrass plant was not in a dominant position to the short grasses, but in a position of being dominated by the shortgrasses on the site. This then lead to the demise of the midgrasses and a spread of the shortgrasses on the site.

This reduction of midgrasses and expansion of shortgrasses, along with the concurrent suppression of fire, allowed the woody plants to proliferate and eventually dominate the site. With their domination, they now captured the sunlight first and replaced the shortgrasses and remnant midgrasses. The area is now a Shrub/Woodland site with a canopy of brush that exceeds 20 to 50 percent. The understory will range from a cover of short and midgrasses to bare ground. When bare ground exists, it develops a crust that limits water infiltration as well as seedling growth. This is now a new steady state that will exist until energy is applied to reduce the brush back to its original state and a maintenance program established to maintain it. The area will probably need to be seeded with a seed source of native seeds and a good grazing management program established to maintain the health and vigor of the forage component.

State and transition model

Figure 7. STM

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	**Midgrasses**			560-1569	
	little bluestem	SCSCS	*Schizachyrium scoparium var. scoparium*	560-1121	–
	false Rhodes grass	TRCR9	*Trichloris crinita*	560-1121	–
	multiflower false Rhodes grass	TRPL3	*Trichloris pluriflora*	560-1121	–
2	**Midgrasses**			1793-2354	
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	560-1121	–
	Arizona cottontop	DICA8	*Digitaria californica*	560-1121	–
	pink pappusgrass	PABI2	*Pappophorum bicolor*	448-897	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	448-897	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	448-897	–
3	**Midgrasses**			448-785	
	hooded windmill grass	CHCU2	*Chloris cucullata*	112-673	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	112-560	–
4	**Shortgrasses**			224-448	
	buffalograss	BODA2	*Bouteloua dactyloides*	224-448	–
	curly-mesquite	HIBE	*Hilaria belangeri*	224-448	–
5	**Shortgrass**			56-112	
	threeawn	ARIST	*Aristida*	56-112	–
6	**Cool-season grasses**			0-224	
	Texas wintergrass	NALE3	*Nassella leucotricha*	0-224	–
Forb					
7	**Forbs**			112-616	
	Forb, annual	2FA	*Forb, annual*	0-112	–
	Riddell's dozedaisy	APRI	*Aphanostephus riddellii*	0-112	–
	white sagebrush	ARLUM2	*Artemisia ludoviciana ssp. mexicana*	0-112	–
	bundleflower	DESMA	*Desmanthus*	0-112	–
	Engelmann's daisy	ENPE4	*Engelmannia peristenia*	0-112	–
	sensitive plant	MIMOS	*Mimosa*	0-112	–
	awnless bushsunflower	SICA7	*Simsia calva*	0-112	–
Shrub/Vine					
8	**Shrubs/Vines**			224-616	
	whitebrush	ALGR2	*Aloysia gratissima*	0-336	–
	spiny hackberry	CEEH	*Celtis ehrenbergiana*	0-336	–
	snakewood	CONDA	*Condalia*	0-336	–
	Texan hogplum	COTE6	*Colubrina texensis*	0-336	–

	vine jointfir	EPPE	*Ephedra pedunculata*	0-336	–
	Texas lignum-vitae	GUAN	*Guaiacum angustifolium*	0-336	–
	Berlandier's wolfberry	LYBE	*Lycium berlandieri*	0-336	–
	pricklypear	OPUNT	*Opuntia*	0-336	–
	mesquite	PROSO	*Prosopis*	0-336	–
	desert yaupon	SCCU4	*Schaefferia cuneifolia*	0-336	–

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 9. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 10. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 11. Community 3.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Animal community

As a historic tall/midgrass prairie, this site was occupied by bison, antelope, deer, quail, turkey, and dove. This site was also used by many species of grassland songbirds, migratory waterfowl, and coyotes. This site now provides forage for livestock and is still used by quail, dove, migratory waterfowl, grassland birds, coyotes, and deer. Feral hogs (Sus scrofa) can be found on most ecological sites in Texas. Damage caused by feral hogs each year includes, crop damage by rutting up crops, destroyed fences, livestock watering areas, and predation on native wildlife, and ground-nesting birds. Feral hogs have few natural predators, thus allowing their population to grow to high numbers. Wildlife habitat is a complex of many different plant communities and ecological sites across the landscape. Most animals use the landscape differently to find food, shelter, protection, and mates. Working on a conservation plan for the whole property, with a local professional, will help managers make the decisions that allow them to realize their goals for wildlife and livestock. Grassland State (1): This state provides the maximum amount of forage for livestock such as cattle. It is also utilized by deer, quail and other birds as a source of food. When a site is in the reference plant community phase (1.1) it will also be used by some birds for nesting, if other habitat requirements like thermal and escape cover are near. Tree/Shrubland (2): This state can be maintained to meet the habitat requirements of cattle and wildlife. Land managers can find a balance that meets their goals and allows them flexibility to manage for livestock and wildlife. Forbs for deer and birds like quail will be more plentiful in this state. There will also be more trees and shrubs to provide thermal and escape cover for birds as well as cover for deer. Converted Land State (3): The quality of wildlife habitat this site will produce is extremely variable and is influenced greatly by the timing of rain events. This state is often manipulated to meet landowner goals. If livestock production is the main goal, it can be converted to pastureland. It can also be planted to a mix of grasses and forbs that will benefit both livestock and wildlife. A mix of forbs in the pasture could attract pollinators, birds and other types of wildlife. Food plots can also be planted to provide extra nutrition for deer. This rating system provides general guidance as to animal preference for plant species. It also indicates possible competition between kinds of herbivores for various plants. Grazing preference changes from time to time, especially between seasons, and between animal kinds and classes. Grazing preference does not necessarily reflect the ecological status of the plant within the plant community. For wildlife, plant preferences for food and plant suitability for cover are rated. Refer to habitat guides for a more complete description of a species habitat needs.

Hydrological functions

This site often occupies a down slope water receiving position. Sediment is deposited from runoff, which helps to form a deep and permeable soil profile. Due to good fertility and water receiving and retention features of the site, production often exceeds that of the associated upslope sites.

Recreational uses

Hunting, camping, and bird watching are common recreational uses.

Inventory data references

Information presented was derived from the revised Range Site, literature, limited NRCS clipping data (417s), field observations, and personal contacts with range-trained personnel.

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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.

Author(s)/participant(s)	
Contact for lead author	
Date	04/17/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

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

7. **Amount of litter movement (describe size and distance expected to travel):**

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

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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

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:

    Sub-dominant:

    Other:

    Additional:

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

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

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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:

17. **Perennial plant reproductive capability:**