

Ecological site R086BY006TX

Loamy Bottomland

Last updated: 9/21/2023
Accessed: 09/02/2026

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): 086B–Texas Blackland Prairie, Southern Part

MLRA 86B, the Southern Part of the Texas Blackland Prairie is located in east-central Texas. It makes up about 2,925 square miles (7,585 square kilometers). The towns of Brenham, Caldwell, La Grange, Schulenberg, Hallettsville, and Navasota are in the eastern part while Lincoln, Benchley, and Normangee are in the western part. The area supports tall and mid-grass prairies, but improved pasture, croplands, and urban development account for the majority of the acreage.

Classification relationships

USDA-Natural Resources Conservation Service, 2006. -Major Land Resource Area (MLRA) 86B

Ecological site concept

The Loamy Bottomlands have that soils are very deep loams and are associated with flooding regimes. The loamy-textured soils allow the water to drain faster than the Clayey Bottomlands, and therefore do not stay inundated as long.

Associated sites

R086BY002TX	Claypan Prairie The Claypan Prairie Site occupies large flats and provides runoff water to the Loamy Bottomland Site.
R086BY003TX	Clay Loam The Clay Loam site is usually adjacent to the Loamy Bottomland Site. Occupies large flats and provides runoff water to the Loamy Bottomland Site.
R086BY005TX	Blackland The Blackland Site occurs at higher elevation in the drainage and provides runoff to the Loamy Bottomland Site.

Similar sites

R086BY007TX	Clayey Bottomland The Clayey Bottomland sites occupy floodplains, like the Loamy Bottomland, but the textures are different and they stay inundated longer.
--------------------	---

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Elymus virginicus</i> (2) <i>Carex</i>

Physiographic features

This site is nearly level to gently sloping and occurs along rivers and streams.

Table 2. Representative physiographic features

Landforms	(1) Valley > Flood plain
Runoff class	Negligible to low
Flooding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Flooding frequency	Occasional to frequent
Elevation	30 – 240 m
Slope	0 %
Water table depth	50 – 180 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate for MLRA 86B is humid subtropical and is characterized by hot summers, especially in July and August, and relatively mild winters. Tropical maritime air controls the climate during spring, summer and fall. In winter and early spring, frequent surges of Polar Canadian air cause sudden drops in temperatures and add considerable variety to the daily weather. When these cold air masses stagnate and are overrun by moist air from the south, several days of cold, cloudy, and rainy weather follow. Generally, these occasional cold spells are of short duration with rapid clearing following cold frontal passages. The summer months have little variation in day-to-day weather except for occasional thunderstorms that dissipate the afternoon heat. The moderate temperatures in spring and fall are characterized by long periods of sunny skies, mild days, and cool nights. Rainfall during the spring and summer months generally falls during thunderstorms, and fairly large amounts of rain may fall in a short time. High intensity rains of short duration are likely to produce rapid runoff almost anytime during the year. The amount of rain that falls varies considerably from month-to-month and from year-to-year.

Table 3 Representative climatic features

Frost-free period (average)	250 days
-----------------------------	----------

Freeze-free period (average)	280 days
Precipitation total (average)	1,070 mm

- (1) BRENHAM [USC00411048], Brenham, TX
- (2) FLATONIA 4SE [USC00413183], Moulton, TX
- (3) WASHINGTON SP [USC00419491], Navasota, TX
- (4) HALLETTSVILLE 2 N [USC00413873], Hallettsville, TX
- (5) LEXINGTON [USC00415193], Lexington, TX

Influencing water features

This site is adjacent to rivers and streams. It receives water from overflow from watercourses and runoff from higher adjacent sites.

Wetland description

Some soils in this site are hydric and may be wetlands or the soils may contain inclusions of other hydric soils that usually occur as oxbows or stream meanders.

Soil features

The soils of this site are deep, loamy-textured, and moderately permeable. They usually receive extra water as overflow from watercourses or as runoff from adjacent higher sites. They are, however, better drained than the clayey bottomland sites. The plant-soil-water-air relationship is very favorable for plant growth. These factors, together with the natural fertility of the soil, favor high yields of good quality forage.

Soils correlated to this site include: Asa, Bergstrom, Bosque, Coarsewood, Gowen, Gowker, Hatliff, Highbank, Norwood, Oklared, Portersprings, Rabbs, Sandow, Weswood, Whitesboro, and Yahola.

Table 4. Representative soil features

Parent material	(1) Alluvium – limestone and shale
Surface texture	(1) Loam (2) Fine sandy loam (3) Clay loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Very 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)	12.7 – 17.78 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 20 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	5.6 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

Natural fertility, presence of shade, proximity to water, and nutritious forage make this site a preferred grazing area. The wet nature of the site protects it from grazing at times, but during dry conditions it is often the first site to be overused. Virginia wildrye (*Elymus virginicus*), eastern gamagrass (*Tripsacum dactyloides*), switchcane (*Arundinaria gigantea*), switchgrass (*Panicum virgatum*), and sedges (*Carex* spp.) decrease in abundance and are replaced by dallisgrass (*Paspalum dilatatum*), common Bermudagrass (*Cynodon dactylon*), bahiagrass (*Paspalum notatum*), and carpetgrass (*Axonopus fissifolius*) as over utilization continues. Shrubs and hardwood saplings invade the site in the absence of proper grazing management and brush management. Prolonged mismanagement or abandonment allows the site to become a hardwood forest dominated by water oak (*Quercus nigra*), willow oak (*Quercus phellos*), overcup oak (*Quercus lyrata*), and cedar elm (*Ulmus crassifolia*) on non-calcareous sites. Green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus* spp.), pecan (*Carya illinoensis*), cedar elm, and sugarberry (*Celtis laevigata*) grow on calcareous sites.

State and transition model

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			1681-2522	
	sedge	CAREX	<i>Carex</i>	1681-2522	–

	Virginia wildrye	ELVI3	<i>Elymus virginicus</i>	1681-2522	–
	rustyseed paspalum	PALA11	<i>Paspalum langei</i>	1681-2522	–
2	Tallgrasses			1121-1681	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	1121-1681	–
	beaked panicgrass	PAAN	<i>Panicum anceps</i>	1121-1681	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	1121-1681	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	1121-1681	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	1121-1681	–
	eastern gamagrass	TRDA3	<i>Tripsacum dactyloides</i>	1121-1681	–
3	Mid/Shortgrasses			560-841	
	common carpetgrass	AXFI	<i>Axonopus fissifolius</i>	560-841	–
	buffalograss	BODA2	<i>Bouteloua dactyloides</i>	560-841	–
	Indian woodoats	CHLA5	<i>Chasmanthium latifolium</i>	560-841	–
	longleaf woodoats	CHSE2	<i>Chasmanthium sessiliflorum</i>	560-841	–
	deertongue	DICL	<i>Dichanthelium clandestinum</i>	560-841	–
	whitegrass	LEVI2	<i>Leersia virginica</i>	560-841	–
	twoflower melicgrass	MEMU	<i>Melica mutica</i>	560-841	–
	nimblewill	MUSC	<i>Muhlenbergia schreberi</i>	560-841	–
	Texas wintergrass	NALE3	<i>Nassella leucotricha</i>	560-841	–
	Florida paspalum	PAFL4	<i>Paspalum floridanum</i>	560-841	–
	Hall's panicgrass	PAHA	<i>Panicum hallii</i>	560-841	–
	vine mesquite	PAOB	<i>Panicum obtusum</i>	560-841	–
	brownseed paspalum	PAPL3	<i>Paspalum plicatulum</i>	560-841	–
	thin paspalum	PASE5	<i>Paspalum setaceum</i>	560-841	–
	marsh bristlegrass	SEPA10	<i>Setaria parviflora</i>	560-841	–
	composite dropseed	SPCOC2	<i>Sporobolus compositus</i> var. <i>compositus</i>	560-841	–
	gaping grass	STHI3	<i>Steinchisma hians</i>	560-841	–
	purpletop tridens	TRFL2	<i>Tridens flavus</i>	560-841	–
Forb					
4	Forbs			644-785	
	partridge pea	CHFA2	<i>Chamaecrista fasciculata</i>	644-785	–
	ticktrefoil	DESMO	<i>Desmodium</i>	644-785	–
	Virginia strawberry	FRVI	<i>Fragaria virginiana</i>	644-785	–
	lespedeza	LESPE	<i>Lespedeza</i>	644-785	–
	prairie snoutbean	RHLA5	<i>Rhynchosia latifolia</i>	644-785	–
	fuzzybean	STROP	<i>Strophostyles</i>	644-785	–
5	Forbs			28-56	
	great ragweed	AMTR	<i>Ambrosia trifida</i>	28-56	–
	annual marsh elder	IVAN2	<i>Iva annua</i>	28-56	–
	giant goldenrod	SOGI	<i>Solidago gigantea</i>	28-56	–
	Baldwin's ironweed	VEBA	<i>Vernonia baldwinii</i>	28-56	–
	white crownbeard	VEVI3	<i>Verbesina virginica</i>	28-56	–
Shrub/Vine					
6	Shrubs/Vines			560-841	
	Alabama supplejack	BESC	<i>Berchemia scandens</i>	560-841	–
	American beautyberry	CAAM2	<i>Callicarpa americana</i>	560-841	–

	trumpet creeper	CARA2	<i>Campsis radicans</i>	560-841	–
	parsley hawthorn	CRMA5	<i>Crataegus marshallii</i>	560-841	–
	possumhaw	ILDE	<i>Ilex decidua</i>	560-841	–
	yaupon	ILVO	<i>Ilex vomitoria</i>	560-841	–
	smooth sumac	RHGL	<i>Rhus glabra</i>	560-841	–
	oakwoods dewberry	RULA5	<i>Rubus largus</i>	560-841	–
	saw greenbrier	SMBO2	<i>Smilax bona-nox</i>	560-841	–
	cat greenbrier	SMGL	<i>Smilax glauca</i>	560-841	–
	laurel greenbrier	SMLA	<i>Smilax laurifolia</i>	560-841	–
	coralberry	SYOR	<i>Symphoricarpos orbiculatus</i>	560-841	–
	muscadine	VIRO3	<i>Vitis rotundifolia</i>	560-841	–
Tree					
7	Trees			1121-1681	
	bitternut hickory	CACO15	<i>Carya cordiformis</i>	1121-1681	–
	pecan	CAIL2	<i>Carya illinoensis</i>	1121-1681	–
	eastern redbud	CECA4	<i>Cercis canadensis</i>	1121-1681	–
	sugarberry	CELAL	<i>Celtis laevigata</i> var. <i>laevigata</i>	1121-1681	–
	green ash	FRPE	<i>Fraxinus pennsylvanica</i>	1121-1681	–
	red mulberry	MORU2	<i>Morus rubra</i>	1121-1681	–
	eastern cottonwood	PODE3	<i>Populus deltoides</i>	1121-1681	–
	water oak	QUNI	<i>Quercus nigra</i>	1121-1681	–
	willow oak	QUPH	<i>Quercus phellos</i>	1121-1681	–
	black willow	SANI	<i>Salix nigra</i>	1121-1681	–
	bald cypress	TADI2	<i>Taxodium distichum</i>	1121-1681	–
	cedar elm	ULCR	<i>Ulmus crassifolia</i>	1121-1681	–

Table 6. Community 1.2 plant community composition

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

Table 7. Community 2.1 plant community composition

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

Table 8. Community 3.1 plant community composition

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

Table 9. Community 4.1 plant community composition

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

Animal community

The Loamy Bottomland Site provided habitat to bison, deer, turkey, migratory birds and large predators such as wolves, coyotes, mountain lions, and black bear. White-tailed deer, turkey, fox and gray squirrels, coyotes, bobcats, and migratory birds find suitable habitat in these savannahs today. The favorable moisture regime of this site attracts many species of wildlife during the hot dry summer months when the quality and quantity of forages on upland sites may be lacking. Where old, mast-producing oaks and pecan trees are present, this site provides habitat for deer, turkey, squirrels, and ducks, especially during the winter. As the savannah degrades through the various vegetative states or transitional pathways, the quality of the habitat may improve for some species and decline for others. Management must be applied to maintain a plant community in optimum habitat quality for the desired animal species.

Hydrological functions

Peak rainfall periods occur in May and June from frontal passage thunderstorms and in September and October from tropical systems as, well as frontal passages. Rainfall amounts may be high (three to five inches per event) and events may be intense. The site is subject to erosion along adjacent stream banks where adequate herbaceous cover is not maintained and on heavy use areas such as roads and livestock trails. Extended periods (60 days) of little to no rainfall during the growing season are common. The site may be periodically inundated from overflow water from adjacent watercourses and may be ponded or saturated for long periods. This site may be a wetland or contain wetland inclusions as oxbows or stream meanders.

Recreational uses

Hunting, camping, bird watching, and equestrian are popular activities.

Wood products

Water oak and willow oak provides material for hardwood flooring, plywood, veneer, and cross-ties. Green ash is used for bats, tool handles, and furniture. Post Oak and water oak are used for firewood. Rattan is used for furniture.

Other products

Blackberries, grapes, and pecans are often harvested.

Inventory data references

These site descriptions were developed as part a Provisional Ecological Site project using historic soil survey manuscripts, available site descriptions, and low intensity field traverse sampling. Future work to validate the information is needed. This will include field activities to collect low, medium, and high-intensity sampling, soil correlations, and analysis of that data. A final field review, peer review, quality control, and quality assurance review of the will be needed to produce the final document.

Other references

Diggs, G.M., B.L. Lipscomb, and R.J. O'Kennon. 1999. Illustrated Flora of North Central Texas Botanical Research Institute of Texas and Austin College, Fort Worth, TX.

Hatch, S.L, K.N. Gandhi, and L.E. Brown. 1990. Checklist of the vascular plants of Texas. Texas Agricultural Experiment Station, College Station, TX.

Contributors

Mark Moseley
Tyson Hart

Approval

Bryan Christensen, 9/21/2023

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)	Mike Stellbauer, David Polk and Bill Deauman
Contact for lead author	Mike Stellbauer, Zone RMS, NRCS, Bryan, Texas.
Date	05/23/2005

Approved by	
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: Water flow patterns are common and follow old stream meanders. Deposition or erosion is uncommon for normal rainfall but may occur during intense rainfall events.

3. Number and height of erosional pedestals or terracettes: Pedestals or terracettes are uncommon for this site when occupied by the reference community.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): Expect no more than 20 percent bare ground randomly distributed throughout.

5. Number of gullies and erosion associated with gullies: Some gullies associated with side drains into perennial streams may be present. Gullies should be vegetated and stable.

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

7. Amount of litter movement (describe size and distance expected to travel): This is a floodplain with occasional out-of-bank flow. Under normal rainfall, little litter movement should be expected, however, litter of all sizes may move long distances, depending on obstructions during intense storm events.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): Soil surface is resistant to erosion. Stability class range is expected to be 4 to 6.

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): The soil structure is 0 to 80 inches thick with colors from dark grayish brown loam to dark brown fine sandy loam and structures from moderate subangular blocky to moderate fine granular. SOM is approximately 0.5 to 4.0 percent.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The savannah of trees, shrubs, vines, grasses, and forbs with adequate litter and little bare ground, provides for maximum infiltration and little runoff under normal rainfall events.
-
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.
-
12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**
- Dominant: Warm-season tallgrasses >>
- Sub-dominant: Cool-season grasses >>
- Other: Trees > Shrubs/Vines > Forbs
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
There should be little mortality or decadence for any functional groups.
-
14. **Average percent litter cover (%) and depth (in):** Small to large woody litter is common on this site.
-
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
5,100 pounds per acre for below average moisture years to 7,500 pounds per acre for above average moisture years.
-
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:** Potential invasive species include chinese tallow, huisache, honey locust, bois d'arc, elm, ash, McCartney rose, dallisgrass, Bermudagrass, johnsongrass, annual sumpweed, and giant ragweed.
-
17. **Perennial plant reproductive capability:** All perennial plants should be capable of reproducing except for periods of prolonged drought conditions, heavy natural herbivory, prolonged flooding, and intense wildfires.
-