Ecological site R080BY607TX
Clayey Upland
26-33" PZ

Last updated: 9/19/2023
Accessed: 06/01/2026

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): 080B–Texas North-Central Prairies

MLRA 80B consists of gently rolling, dissected plains with very steep hillsides and sideslopes and narrow flood plains associated with small streams. Loamy and clayey soils range from very shallow to deep and developed in sandstones, shales, and limestones of Pennsylvanian age.

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 deep clay soils on uplands. The reference vegetation consists of native midgrasses and shortgrasses with scattered forbs and very few shrubs. These areas are prone to invasion by mesquite without periodic fire or other brush management.

Associated sites

R080BY146TX	**Clay Loam 26-33" PZ** Clayey Upland sites are most frequently found adjacent to Clay Loam sites.

Similar sites

R078CY095TX	**Clay Flat 23-30" PZ** Similar species and slightly lower production in MLRA adjacent to western counties. Tobosagrass is an indicator species on this site.
R078AY117TX	**Clayey Upland 25-28" PZ** Similar species and slightly lower production in MLRA adjacent to western counties.
R081BY324TX	**Clay Flat 23-31 PZ** Similar species and slightly lower production in MLRA adjacent to southern counties.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Bouteloua curtipendula* (2) *Nassella leucotricha*

Physiographic features

This site occurs on linear base slopes of hillslopes, valley floors, and treads of stream terraces in the Texas North-Central Prairies. Slopes are typically less than 5 percent.

Table 2. Representative physiographic features

Landforms	(1) Hills > Hillslope (2) Hills > Ridge (3) Alluvial plain > Stream terrace
Runoff class	High to very high
Elevation	230 – 730 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

The climate is subtropical subhumid and is characterized by hot humid summers 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. The average first frost generally occurs about November 5 and the last freeze of the season usually occurs about March 19. The average frost free period ranges from 215 days in the northern counties, to 240 days in the south.

The average relative humidity in mid-afternoon is about 60 percent in the summer months. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 75 percent of the time possible during the summer and 50 percent in winter. The prevailing wind direction is from the southwest and highest windspeeds occur during the spring months.

Approximately 75% of annual rainfall occurs between April 1 and October 31. Rainfall during the months of April through September typically occurs during thunderstorms which tend to be intense and brief, resulting in large amounts of rain in a short time. The wettest months of the year are May, June, September, and October. The driest months during the growing season are July and August. The winter months of November, December, January, and February are the driest months overall.

Average annual precipitation for the entire MLRA is approximately 28 inches. There is a noticeable difference in the average annual precipitation in the northern counties in comparison to the southern and western counties of this Major Land Resource Area. Jack, Clay, Young, and Palo Pinto Counties all have an average annual precipitation of more than 31 inches. Stephens, Eastland, McCulloch, and San Saba Counties all have an average annual precipitation of less than 28 inches.

Winters tend to be mild, with occasional periods of very cold temperatures which can be accompanied by strong northerly winds and freezing precipitation. Snow is infrequent and significant accumulations are rare. These periods of very cold weather are generally short-

lived. Summers tend to be hot and dry. Drought conditions are common during most summers. Air temperatures of more than 95oF are common from mid-June through September. In the northern counties nearest to the Red River, temperatures are generally slightly cooler during winter months and slightly warmer during summer months than in the other counties in the North Central Prairie.

Table 3 Representative climatic features

Frost-free period (characteristic range)	180-200 days
Freeze-free period (characteristic range)	210-230 days
Precipitation total (characteristic range)	760-810 mm
Frost-free period (actual range)	180-200 days
Freeze-free period (actual range)	210-230 days
Precipitation total (actual range)	740-840 mm
Frost-free period (average)	190 days
Freeze-free period (average)	220 days
Precipitation total (average)	790 mm

- (1) SAN SABA 7NW [USC00417994], Richland Springs, TX
- (2) BROWNWOOD 2ENE [USC00411138], Early, TX
- (3) EASTLAND [USC00412715], Eastland, TX
- (4) MINERAL WELLS AP [USW00093985], Millsap, TX
- (5) BRECKENRIDGE [USC00411042], Breckenridge, TX
- (6) GRAHAM [USC00413668], Graham, TX
- (7) JACKSBORO [USC00414517], Jacksboro, TX

Influencing water features

The areas are prone to shedding rainwater via runoff to adjacent sites. However, the presence of good ground cover and deep rooted grasses can help facilitate water infiltration into the soil. These sites are not associated with wetlands.

Wetland description

NA

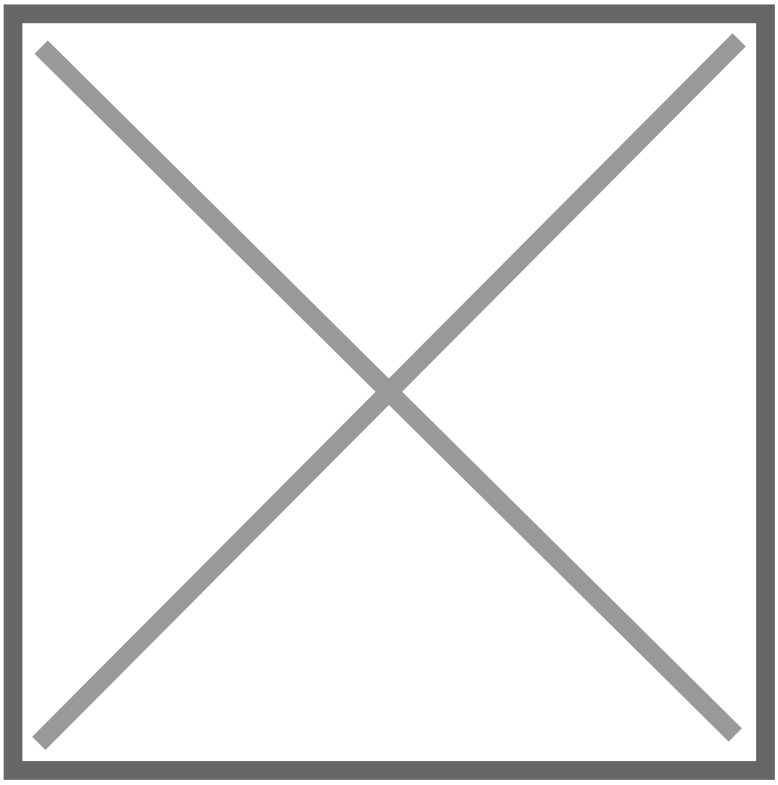

Figure 7.

Soil features

The Clayey Upland ecological site consists of deep, well drained soils. Permeability is very slow. Runoff is low on slopes less than 1 percent, moderate on 1 to 3 percent slopes and high on 3 to 5 percent slopes. The soil develops wide cracks during dry conditions, but seals over quickly and becomes extremely sticky and plastic when wet. Water enters the soil rapidly when it is dry and cracked, and very slowly when it is moist. Runoff is negligible when soil is cracked and dry, and rapid when soil is moist and sealed over.

Gilgai micro-relief is characteristic of the Clayey Upland site. Gilgai refers to numerous shallow depressions and low mounds running parallel to the slope and randomly scattered throughout the site. The heavy clay soil has a high shrink-swell capacity. During extended wet periods, the soil expands and becomes spongy and boggy. Livestock, humans, and vehicles have difficulty traversing the site. They tend to bog down and leave depressions in the soil surface. As the soil dries out it contracts, leaving numerous cracks on the soil surface. Depressions caused by livestock, humans, or vehicles remain, leaving the dry soil surface uneven in many places. The soil is highly susceptible to compaction caused by heavy foot traffic or vehicle traffic.

The major soil series is Leeray.

Table 4. Representative soil features

Parent material	(1) Alluvium – claystone (2) Slope alluvium – claystone (3) Alluvium – limestone (4) Slope alluvium – limestone
Surface texture	(1) Clay
Drainage class	Well drained
Permeability class	Very slow

Soil depth	150 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	17.78 – 22.86 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 40 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 20
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 8.4
Subsurface fragment volume <=3" (0-101.6cm)	0 – 10 %
Subsurface fragment volume >3" (0-101.6cm)	Not specified

Ecological dynamics

The reference plant community for the Clayey Upland ecological site is a midgrass/shortgrass prairie. Evidence of the historic vegetation can be found in the journals and records of explorers, military expeditions, boundary survey teams, and early scientists who studied the vegetation.

Gilgai microrelief is a unique and characteristic feature of this site. Western wheatgrass, vine mesquite, and other similar grasses are found in the scattered shallow depressions. Warm-season midgrasses are dominant in the interspaces as well as on the sides and tops of low mounds.

Climate is a major factor influencing vegetation on the site. The soils are deep, but rooting depth of herbaceous vegetation is restricted because of the density of the heavy clay soil. As a result, plants on this site are among the earliest to show signs of distress in the early stages of drought. Even short-term dry periods have a negative impact on this site compared to associated sites. The Clayey Upland ecological site can be useful as an indicator to begin preparations for implementation of the first stage of drought plans. Because of the boggy nature of the heavy clay soil, livestock grazing and vehicle traffic often have to be restricted during extended wet periods.

Long-term droughts lasting multiple years or growing seasons are infrequent, but when they do occur, they can have a negative impact on the vegetation. If abusive grazing occurs during or immediately following the drought period, the results can be devastating. The effects of erratic seasonal moisture and short-term dry spells lasting a few months are not as severe as those caused by long-term droughts. However, the lower the ecological status of the site, the greater the negative impact will be during drought periods regardless of duration.

Fire was an important part of the ecosystem. Historic fires on this site were not as intense as they were on most associated sites because of the structure of the vegetation, and the relatively low amount of fine fuel to sustain the fires. The shorter height of the grasses and the scarcity of forbs and woody plants contributed to these less intense fires. However, fires of moderate to low intensity did play a key role in refreshing and reinvigorating the old growth vegetation and keeping weeds and brush suppressed. Lack of fire allows unwanted woody species and weeds to encroach from adjacent sites and become established.

Prior to settlement, this site was subject to periodic grazing and browsing by vast herds of bison, wild cattle, wild horses, and antelope. It was not a preferred site except for short periods of time during the early spring when fresh, new growth of annuals and shortgrasses appeared. At times these grazing and browsing episodes were intense and severe, but periods of heavy use were followed by long periods of non-use as the herds migrated to fresh grazing areas before returning to previously grazed areas. The grazed areas had an opportunity to rest, regrow, regain vigor, and reproduce prior to the next grazing event.

As the region was settled, fire was reduced or eliminated and grasslands were fenced off to control movement and facilitate grazing by domestic livestock. As a result of abusive grazing or lack of grazing and/or the elimination of fire, in association with extreme climatic events, the historic plant community has been altered on most Clayey Upland sites. As late- successional midgrasses decrease on the site, they are replaced by early-successional midgrasses, a significant increase in the shortgrasses, as well as annual grasses and forbs. Further deterioration leads to the loss of the perennial midgrass plant community as shortgrasses, annual forbs, and annual grasses, begin to dominate the site. If disturbances are severe enough for an extended period of time, annual species dominate and bare ground is extensive. This provides the opportunity for woody species such as mesquite, lotebush, pricklypear, tasajillo, and juniper to encroach from adjacent sites.

Selective removal of individual undesirable trees and shrubs is relatively easy and more practical when brush plants initially appear on the site. The increase of brush can be fairly rapid and the plants per acre will soon become too numerous for individual control to be feasible. Once woody plants become mature or develop into dense stands, control is expensive, uneconomical, impractical, and difficult to achieve. Brush management is most successful using a systems approach. Initial treatment by mechanical methods can be followed by using approved herbicides, and using prescribed fire as a maintenance technique. Prescribed grazing with a reasonable stocking rate can sustain the grass species composition and production at a near reference level.

Changes in plant communities and vegetation states on the Clayey Upland site are result of the combined influences of natural events (rainfall, temperature, drought, etc.) and the accompanying management systems implemented on the area (prescribed fire, grazing management, brush management).

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:
The State and Transition Diagram which follows provides information on some of the most typical pathways that the vegetation on this site can follow as the result of natural events, management inputs, and application of conservation treatments. There may be other plant communities that can exist on this site under certain conditions. Consultation with local experts and professionals is recommended prior to application of practices or management strategies in order to ensure that specific objectives will be met.

Plant Communities and Transitional Pathways (diagram):

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**			1457-2634	
	vine mesquite	PAOB	*Panicum obtusum*	0-2018	–
	sideoats grama	BOCU	*Bouteloua curtipendula*	280-2018	–
	Texas wintergrass	NALE3	*Nassella leucotricha*	280-1345	–

2	**Midgrasses**			504-897	
	Drummond's dropseed	SPCOD3	*Sporobolus compositus var. drummondii*	56-448	–
	white tridens	TRAL2	*Tridens albescens*	22-448	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	56-448	–
	Arizona cottontop	DICA8	*Digitaria californica*	0-448	–
	Texas cupgrass	ERSE5	*Eriochloa sericea*	0-224	–
	Rio Grande bristlegrass	SERER	*Setaria reverchonii ssp. ramiseta*	0-224	–
3	**Midgrasses**			112-224	
	hooded windmill grass	CHCU2	*Chloris cucullata*	0-112	–
	hairy grama	BOHI2	*Bouteloua hirsuta*	0-112	–
	sedge	CAREX	*Carex*	0-56	–
	tumble windmill grass	CHVE2	*Chloris verticillata*	0-56	–
	Wright's threeawn	ARPUW	*Aristida purpurea var. wrightii*	0-56	–
4	**Shortgrasses**			224-504	
	buffalograss	BODA2	*Bouteloua dactyloides*	0-504	–
	curly-mesquite	HIBE	*Hilaria belangeri*	0-504	–
	Texas grama	BORI	*Bouteloua rigidiseta*	0-56	–
5	**Cool-season grasses**			56-168	
	western wheatgrass	PASM	*Pascopyrum smithii*	0-168	–
	Texas bluegrass	POAR	*Poa arachnifera*	0-168	–
Forb					
6	**Forbs**			112-224	
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0-56	–
	Texas thistle	CITE2	*Cirsium texanum*	0-56	–
	Queen Anne's lace	DACA6	*Daucus carota*	0-56	–
	prairie clover	DALEA	*Dalea*	0-56	–
	Engelmann's daisy	ENPE4	*Engelmannia peristenia*	0-56	–
	Leavenworth's eryngo	ERLE11	*Eryngium leavenworthii*	0-56	–
	beeblossom	GAURA	*Gaura*	0-56	–
	curlycup gumweed	GRSQ	*Grindelia squarrosa*	0-56	–
	Indian rushpea	HOGL2	*Hoffmannseggia glauca*	0-56	–
	pony beebalm	MOPE	*Monarda pectinata*	0-56	–
	woodsorrel	OXALI	*Oxalis*	0-56	–
	smartweed leaf-flower	PHPO3	*Phyllanthus polygonoides*	0-56	–
	upright prairie coneflower	RACO3	*Ratibida columnifera*	0-56	–
	white heath aster	SYERE	*Symphyotrichum ericoides var. ericoides*	0-56	–
	slender greenthread	THSI	*Thelesperma simplicifolium*	0-56	–
	Texas vervain	VEHA	*Verbena halei*	0-56	–
	spiny cocklebur	XASP2	*Xanthium spinosum*	0-56	–
Shrub/Vine					
7	**Shrubs/Vines**			0-28	
	gum bully	SILA20	*Sideroxylon lanuginosum*	0-28	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0-11	–
	clapweed	EPAN	*Ephedra antisyphilitica*	0-11	–
Tree					
8	**Trees**			0-28	

	hackberry	CELTI	*Celtis*	0-28	–

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 3.1 plant community composition

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

Table 10. Community 3.2 plant community composition

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

Animal community

Historically, the Clayey Upland site was occasionally utilized by a variety mammals, reptiles, and birds. Several historical references and journals written in the 18th and 19th century by explorers, survey parties, and military expeditions refer to herds of bison, wild cattle, wild horses, and antelope roaming freely across the North Central Prairie and adjacent regions. Currently, the site is utilized intermittently by deer, quail, dove, species of grassland birds, and small fur-bearing mammals. Feral hogs are also frequent visitors to the site in some areas. This is not a preferred site for most wildlife species because of the relatively low and uniform structure of the vegetation, as well as the lack of trees, shrubs, and forbs. Wildlife tend to use this site incidentally in association with the use of more suitable adjacent sites. Animal species and populations fluctuate as the vegetation cycles through temporary phases and different ecological stages. Animals may have difficulty traversing the site when the soil is wet. Livestock grazing should be controlled by implementing grazing management systems that incorporate frequent and timely deferment periods to prevent abusive grazing.

Hydrological functions

When the soil is cracked and dry, infiltration is rapid and runoff is limited on this site. When the soil is wet, it seals over and runoff is accelerated. A thick, healthy grass cover reduces runoff velocity and results in improved water quality because it serves as a filter or trap to reduce sediments and pollutants before the water flows offsite.

Recreational uses

Because of the scarcity of trees and shrubs, the level terrain, characteristics of the soil, and the uniformity of the plant community, recreational use of this site is incidental and is generally associated with recreational use of adjacent sites.

Wood products

Insignificant.

Other products

Insignificant.

Other information

None.

Inventory data references

Vegetation data for this site was obtained from existing Range Site Descriptions, SCS-RANGE -417 Production and Composition Records for Native Grazing Lands, and on-site inventories by the author and local experts including ranchers, natural resource specialists from federal and state agencies, and personnel from cooperating agencies and organizations. A total of 11 SCS-RANGE-417’s containing data collected from 4 counties (Brown, Shackelford, Palo Pinto and Stephens Counties) during the period 12/30/1981 to 12/12/1986 were

reviewed for this site.

References

. 2021 (Date accessed). **USDA PLANTS Database**. http://plants.usda.gov.

Other references

Ajilvsgi, Geyata. Wildflowers of Texas. Sharer Publishing, Bryan, TX. 1984.

Coffey, Chuck R., and Russell Stevens. Grasses of Southern Oklahoma and North Texas: A Pictorial Guide. The Samuel Roberts Noble Foundation, Ardmore, OK. 2004

Diggs, George M., Jr., Barney L. Lipscomb, and Robert J. O'Kennon. Illustrated Flora of North Central Texas. Botanical Research Institute of Texas. Fort Worth, TX 1999.

Egan, Dave and Evelyn A. Howell. The Historical Ecology Handbook…A Restorationist's Guide to Reference Ecosystems. Island Press, Washington, DC. 2001.

Enquist, Marshall. Wildflowers of the Texas Hill Country. Lone Star Botanical, Austin, TX. 1987.

Flores, Dan. "Indian Use of Range Resources" presented at 20th Annual Ranch Management Conference. Lubbock, TX, September 30, 1983.

Gould, Frank W., The Grasses of Texas. Texas A&M University Press, College Station, TX. 1975.

Hatch, Stephan L., Kancheepuram N. Gandhi, and Larry E. Brown. Checklist of the Vascular Plants of Texas. Texas Agricultural Experiment Station MP-1655. College Station, TX. 1990

Hatch, Stephan L., Jennifer Pluhar. Texas Range Plants. Texas A&M University Press, College Station, TX. 1993.

Kelton, Elmer. "History of Rancher Use of Range Resources" presented at 20th Annual Ranch Management Conference. Lubbock, TX, September 30, 1983.

Ladd, Doug. Tallgrass Prairie Wildflowers. Falcon Press, Helena and Billings, MT. 1995.

Parker, W.B. Through Unexplored Texas In The Summer and Fall of 1854. The Texas State Historical Commission. Austin, TX 1984

Smith, Jared G. Grazing Problems in the Southwest and How to Meet Them. United States Department of Agriculture Division of Agrostology. Washington, DC. 1899.

Texas Almanac Sesquicentennial Edition 1857-2007. Dallas Morning News. Dallas, TX. 2006.

Tyrl, Ronald J., Terrence G. Bidwell, and Ronald E. Masters. Field Guide to Oklahoma Plants. Oklahoma State University, Stillwater, OK. 2002.

United States Department of Agriculture Natural Resources Conservation Service, National Plant Data Center, Baton Rouge, LA. The PLANTS Database. http://plants.usda.gov 2007.

United States Department of Agriculture Natural Resources Conservation Service, Ag Handbook 296. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. 2006.

United States Department of Agriculture Soil Conservation Service, Temple, TX. Production and Composition Record for Native Grazing Lands. SCS-RANGE 417 data from Brown, Eastland, Jack, Stephens, and Young Counties. 1981-1986.

United States Department of Agriculture Soil Conservation Service, Washington, DC. Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/. 2007

United States Department of Agriculture Soil Conservation Service, Temple, TX. Published Soil Surveys: Brown and Mills, Jack, Palo Pinto, Parker, Stephens, and Young Counties. Various publication dates.

United States Department of Agriculture Soil Conservation Service, Temple, TX. Range Site Descriptions for the North Central Prairie counties. Various publication dates.

Vines, Robert A. Trees of North Texas. University of Texas Press, Austin, TX. 1982

Weniger, Del. The Explorers' Texas. Eakin Publications. Austin, TX. 1984.

Williams, Gerald W. References On The American Indian Use Of Fire in Ecosystems. United States Department of Agriculture – Forest Service, Washington, DC. 2005.

ACKNOWLEDGEMENTS: I would like to express my thanks and appreciation to the following for their cooperation, assistance, and support in the development of this Ecological Site Description:

Tony Baeza, NRCS – Breckenridge, TX
Dalton Merz, rancher – Holland, TX
Myron Merz, NRCS – Mineral Wells, TX

Reviewers:
Lem Creswell, RMS, NRCS, Weatherford, Texas
Nathan Haile, RSS, NRCS, Weatherford, Texas

Contributors

Dan Caudle, DMC Resource Management, Weatherford, Texas
PES edits by Colin Walden, Stillwater Soil Survey Office

Approval

Bryan Christensen, 9/19/2023

Acknowledgments

Site Development and Testing Plan: Future work, as described in a Project Plan, to validate the information in this Provisional Ecological Site Description is needed. This will include field activities to collect low, medium and high intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document. Annual reviews of the Project Plan are to be conducted by the Ecological Site Technical Team.

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Lem Creswell, Zone RMS, NRCS, Weatherford, Texas
Contact for lead author	817-596-2865
Date	10/22/2007
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:** 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):** Expect no more than 10% bare ground randomly distributed throughout.

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):** Under normal rainfall, little litter movement should be expected. However, litter may move across the site 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 in HCPC is resistant to erosion. Stability class range is expected to be 5-6.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** 0 to 72 inches thick with dark grayish brown clay with generally moderate fine granular and subangular blocky structure. SOM is approximately 1-6%. See soil survey for specific soil info.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Areas of dense, low growing, sod forming shortgrasses may contribute to moderately high runoff rate and reduced infiltration.

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 midgrasses >>

    Sub-dominant: Warm-season shortgrasses > Cool-season grasses >

    Other: Forbs > Shrubs

    Additional:

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Grasses due to their growth habit will exhibit some mortality and decadence, though very slight.**

---

14. **Average percent litter cover (%) and depth (in): Litter is dominantly herbaceous.**

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production): 2200-4200 pounds per acre.**

---

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: Mesquite, pricklypear, tasajillo, broomweed and King Ranch bluestem.**

---

17. **Perennial plant reproductive capability: All perennial plants should be capable of reproducing, except during periods of prolonged drought conditions,abusive grazing, and wildfires.**
