

Ecological Reference Worksheet

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Reference site used? No. Compiled from field experiences, Compiled from technical reports, professional consensus and prior field experience.

Date: _____ **MLRA:** 78C **Ecological Site:** Gyp 078CY038OK

This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community *cannot* be used to identify the ecological site.

<p>Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for <u>each</u> community within the reference state, when appropriate & (3) cite data. Continue descriptions on separate sheet.</p>
<p>1. Number and extent of rills: Very few rills.</p>
<p>2. Presence of water flow patterns: Distinct, particularly on steeper slopes. Not usually more than .5 foot deep.</p>
<p>3. Number and height of erosional pedestals or terracettes: Common, around small rocks and around bunchgrasses, but usually not more than 1 – 2 inches deep.</p>
<p>4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy is not bare ground): About 40 - 50%. (Rock = 2 - 25%)</p>
<p>5. Number of gullies and erosion associated with gullies: Shallow soil limits formation of anything but small gullies. Usually these are on steeper slopes, are rounded, less than 1 – 2 feet deep and 2 – 3 feet wide. Geologic erosion may occur on this site.</p>
<p>6. Extent of wind scoured, blowouts and/or depositional areas: None</p>
<p>7. Amount of litter movement (describe size and distance expected to travel): Litter can move 1- 3 feet after a high intensity rainfall event. It is difficult to maintain litter on exposed soil, particularly on the high slopes portion.</p>
<p>8. Soil surface (top few mm) resistance to erosion (stability values are averages – most sites will show a range of values for both plant canopy and interspaces, if different): Stability score 4+.</p>
<p>9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness for both plant canopy and interspaces, if different): See Soil Series description.</p>
<p>10. Effect of plant community composition (relative proportion of different functional groups) & spatial distribution on infiltration & runoff: Mid-grass (little bluestem, sideoats grama), short grass/shrub community randomly dispersed. Slopes and very slowly permeable soils result in high runoff.</p>
<p>11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): No compaction layer but fine texture and hard structure can be mistaken for compaction layer.</p>
<p>12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to): Mid-grass (little bluestem, sideoats) >> sod grasses > warm-season perennial forbs > tallgrass>.shrubs > cool season grasses and grasslikes ></p>
<p>13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Due to the droughty nature of this site, some mortality will occur, especially with three-awns, sideoats grama and little bluestem. Death loss could be around 10%, higher in extremely dry, hot years.</p>
<p>14. Average percent litter cover: Litter cover should average 5 - 30% and less than ½ inch depth. Basal cover approximately 5 - 10%.</p>
<p>15. Expected annual production (this is TOTAL above-ground production, not just forage production): Normal Production is 1195 lbs.</p>
<p>16. Potential invasive (including noxious) species (native and non-native). List species which characterize degraded states and which, after a threshold is crossed, “can, and often do, continue to increase regardless of the management of the site and may eventually dominate the site”: Main invasives are eastern redcedar</p>
<p>17. Perennial plant reproductive capability: All plants capable of reproducing at least every 2 – 3 years.</p>

Functional/Structural Groups Worksheet

State _____ Office _____ Ecological Site _____ Site ID _____

Observers _____ Date _____

Functional/Structural Groups			Species List for Functional/Structural Groups
Name	Potential ¹	Actual ²	Plant Names
Tall / Midgrasses	D		Little bluestem. Sideoats grama
Tallgrasses	M		Big or sand bluestem, switchgrass, indiangras
Mid / shortgrasses	S		Threawn, blue grama, hairy grama, dropseed, tridens
Forbs	M		Broomweed, purple prairie clover, Illinois bundleflower
Additional species groups of interest			
Noxious Weeds			
Invasive Native Plants			Eastern redcedar
Invasive Exotic Plants			
Biological Crust ³			

Indicate whether each “structural/functional group” is a **Dominant (D)** (roughly 40-100 % composition), a **Sub-dominant (S)** (roughly 11-40% composition) a **Minor Component (M)** (roughly 2-10% composition), or a **Trace Component (T)** (<2% composition) based on weight or cover composition in the area of interest (e.g., “Actual²” column) relative to the “Potential²” column derived from information found in the ecological site/description and/or at the ecological reference area.

Biological Crust³ dominance is evaluated solely on **cover** not composition by weight.

Evaluation Worksheet for Rangeland Health

Aerial Photo: _____

Management Unit _____ State _____ Office _____ Range/Ecol. Site Code: _____
(Allotment or pasture)

Ecological Site Name: _____ Soil Map Unit/Component Name: _____

Observers: _____ Date: _____

Location (description): _____

T. _____ R. _____ or _____ N. Lat. Or UTM E _____ m Position by GPS? Y / N
UTM Zone _____, Datum _____
Sec. _____ W. Long. N _____ m Photos taken? Y / N

Size of evaluation area _____

Soil / site verification:

Range/Ecol. Site Descr., Soil Surv., and/or Ecol. Ref. Area:

Evaluation Area:

Surface texture _____

Surface texture _____

Depth: very shallow __, shallow __, moderate __, deep __

Depth: very shallow __, shallow __, moderate __, deep __

Type and depth of diagnostic horizons:

Type and depth of diagnostic horizons:

1. _____ 3. _____

1. _____ 3. _____

2. _____ 4. _____

2. _____ 4. _____

Surf. Efferv.: none __, v. slight __, slight __, strong __, violent __

Surf. Efferv.: none __, v. slight __, slight __, strong __, violent __

Parent material _____ Slope _____% Elevation _____ ft.

Topographic position _____ Aspect _____

Average annual precipitation _____ inches

Seasonal distribution _____

Recent weather (last 2 years) (1) drought __, (2) normal __, or (3) wet __.

Wildlife use, livestock use (intensity and season of allotted use), and recent disturbances:

Off-site influences on evaluation area:

Criteria used to select this particular evaluation area as REPRESENTATIVE (specific info. And factors considered; degree of "representativeness")

Other remarks (continue on back if necessary)

Reference: (1) Ecological Reference Worksheet: _____; Author: _____; Creation Date: _____
or (2) Other (e.g. name and date of ecological site description, locations of ecological reference area(s)) _____

Evaluation Matrix for Rangeland Health

State: OK Office _____
 Authors: Jack Eckroat

Ecological Site: Gyp
 Date: 9/06

ID: 078CY038OK

Departure from Ecological Site Description/Ecological Reference Worksheet					
Indicator	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills	Rill formation is severe and well defined throughout the entire area.	Rill formation is moderately active and well defined throughout most of the area	There is evidence of slight active rill formation at infrequent intervals, mostly on exposed areas.	No recent formation of rills; Old rills have blunt or muted features	Ecological Reference Worksheet: Minimum evidence of current or past formation of rills.
2. Water Flow Patterns	Water eroded channels are numerous, extensive and mostly connected throughout. Most channels have signs of headcutting and actively eroding bottom channels.	Water flow patterns are visible in the soil surface and numerous and occasionally connected. erosion and/or deposition are common in the water flow channels.	Water flow patterns are visible in vegetation and water tends to flow in channels in the soil that are short and stable rather than evenly over the ground; some minor erosion is evident with some instability and deposition occurring.	Some water flow patterns are found in the vegetation but not visible in the soil. The general flow of the water is distributed evenly over the landscape.	Ecological Reference Worksheet: No current visible patterns of water flow or evidence of soil movement.
3. Pedestals and/or Terracettes	Abundant active pedestalling and numerous terracettes. Most rocks and plants are pedestalled; exposed plant roots are common.	Moderate active pedestalling; terracettes common. Some rocks and plants are pedestalled with occasional exposed roots.	Slight active pedestalling; most pedestals are in flow paths and interspaces and/or exposed slopes. Occasional terracettes present.	No active pedestalling but some evidence of past pedestal formation, especially in water flow patterns or from wind on exposed slopes. No evidence of terracettes.	Ecological Reference Worksheet: No current and minimal evidence of past pedestalling. Terracettes absent or uncommon
4. Bare Ground	Much higher (%) than expected for the site. Bare areas are large and generally connected.	Moderate to much higher than expected for the site. Bare areas are large and occasionally connected.	Moderately higher than expected for the site. Bare areas are of moderate size and sporadically connected.	Slightly to moderately higher than expected for the site. Bare areas are small and rarely connected.	Ecological Reference Worksheet: Amount and size of bare areas matches what is expected for the site.
5. Gullies	Common with indications of active erosion and down cutting; vegetation is infrequent on slopes and/or bed. Nick points and headcuts are numerous and active.	Commonly present in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Headcuts are active; down-cutting is not apparent.	Moderate in number with indications of active erosion; vegetation is intermittent on slopes and/or bed. Occasional headcuts may be present.	Uncommon in number; Vegetation is stabilizing the bed and slopes; no signs of active headcuts nick points, or bed erosion.	Ecological Reference Worksheet: Drainages are represented as natural stable channels; no signs of erosion with vegetation common throughout drainages.

Indicator	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
6. Wind Scoured, Blowout and/or Depositional Areas	Wind scoured areas extensive with exposed roots common.	Wind scoured areas are common throughout site with some exposed roots.	Occasional wind scoured areas present with some exposed roots; Mostly on exposed slopes	Infrequent evidence of wind scoured areas or exposed roots;	Ecological Reference Worksheet: Minimal evidence of active or past wind scoured areas
7. Litter Movement (wind or water)	Extreme; concentrated around obstructions. Most size classes of litter have been displaced.	Moderate to extreme; loosely concentrated near obstructions. Moderate (stems, seedheads) to small size classes of litter have been displaced.	Moderate movement of smaller size classes in scattered concentrations around obstructions and in depressions.	Slightly more movement than expected for the site with only small size classes (leaf litter) of litter being displaced.	Ecological Reference Worksheet: Litter movement is minimal to none; distribution of litter is fairly uniform
8. Soil Surface Resistance to Erosion	Extremely reduced throughout the site. Biological stabilization agents including organic matter and biological crusts virtually absent. Soil Stability scores typically less than 2.	Significantly reduced in most plant canopy interspaces and moderately reduced beneath plant canopies. Stabilizing agents present only in isolated patches.	Surface stability significantly reduced in at least half of the plant canopy interspaces or moderately reduced throughout the site. Soil stability scores range from 3-4	Some reduction in soil surface stability in plant interspaces or slight reduction throughout the site. Stabilizing agents reduced below expected.	Ecological Reference Worksheet: Stability Scores of Surface soil is stabilized by decomposing organic matter and/or biological crusts. Soil Stability scores typically 4 or better.
9. Soil Surface Loss or Degradation	Soil surface horizon nearly absent to absent (<25% of surface horizon in place). Soil structure near surface is similar to, or more degraded, than that in subsurface horizons. No distinguishable difference in subsurface organic matter content.	Soil loss or degradation severe throughout site. Minimal differences in soil organic matter content and structure of surface and subsurface layers.	Moderate soil loss (50-75% of surface horizon still in place) or degradation in plant interspaces with some degradation beneath plant canopies. Soil structure is degraded and soil organic matter content is significantly reduced.	Some soil loss has occurred and/or soil structure shows signs of degradation especially in plant interspaces.	Ecological Reference Worksheet: Soil surface horizon intact. Soil structure and organic matter content match what is expected for the site.
10. Plant Community Composition & Distribution Relative to Infiltration & Runoff	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover changes have occurred.	Infiltration is greatly decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is moderately reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration is slightly to moderately affected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	Ecological Reference Worksheet: Infiltration and runoff are not affected by any changes in plant community composition or distribution. Plant cover is adequate for site protection.

Indicator	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
11. Compaction Layer (below soil surface)	Extensive; severely restricts water movement and root penetration.	Widespread; greatly restricts water movement and root penetration.	Moderately wide-spread, moderately restricts water movement and root penetration.	Rarely present or is thin and weakly restrictive to water movement and root penetration.	Ecological Reference Worksheet: None to minimal, not restrictive to water movement and root penetration
12. Functional/ Structural Groups (F/S Groups) See Functional/ Structural Groups Worksheet	Less dominant functional groups dominate the site. Original dominant functional groups non-existent. Plant functional groups not present in the HPC also may dominate. Number of species in most functional groups is extremely low.	Dominant plant functional groups represented by only a scattered few individual species. Less dominant functional groups now dominate the site. Plant functional groups not present in the HPC are common. Number of species in most functional groups is low.	Dominant plant functional groups occur, but no longer dominate; less dominant groups now dominate the site. Some plant functional groups not present in the HPC may be present. Number of species in most functional groups is low to moderate	Dominant plant functional groups are diminished but still dominate. Less dominant plant functional groups are represented in slightly higher proportion than expected for the site. Number of species are nearly equal to that expected.	Ecological Reference Worksheet: Functional plant groups and species closely match that which is described as the Historic Plant Community.
13. Plant Mortality/ Decadence	Dead and/or decadent plants are common	Dead plants and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present	Slight plant mortality and/or decadence.	Ecological Reference Worksheet: Some decadence with perennial grasses in the absence of fire and herbivory but usually matches what is expected for the site.
14. Litter Amount	Largely absent or dominant relative to site potential and weather.	Greatly increased or reduced relative to site potential and weather.	Moderately more or less relative to site potential and weather.	Slightly more or less relative to site potential and weather.	Ecological Reference Worksheet: Amount of litter should be what is expected for the site potential and weather.
15. Annual Production	Less than 20% of potential production for the site based on recent weather.	20-40% of potential production for the site based on recent weather.	40-60% of potential production for the site based on recent weather.	60-80% of potential production for the site based on recent weather.	Ecological Reference Worksheet:
16. Invasive Plants	Dominate the site (Woody species >30% canopy or 200 plants per acre) Herbaceous >40% composition by weight	Common throughout the site.	Scattered throughout the site (Woody species 5-10% canopy or <100 plants per acre; Herbaceous 10-25% composition by weight)	Occasional within the site.	Ecological Reference Worksheet: Rarely present on this site

Indicator	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
17.Reproductive Capability of Perennial Plants (native or seeded)	Capability to produce seed or vegetative tillers is severely reduced. (<25% as compared to what should be expected).	Capability to produce seed or vegetative tillers is greatly reduced. (25-50% as compared to what should be expected).	Capability to produce seed or vegetative tillers is moderately reduced (50-75% as compared to what should be expected).	Capability to produce seed or vegetative tillers is slightly reduced (>75% as compared to what should be expected).	Ecological Reference Worksheet: Capability to produce seed and vegetative tillers is not reduced relative to recent climatic conditions. Seed stalks, stalk length, and seedheads are numerous and what would be expected. Overall health of plants is what would be expected.