

Appendix 5.

Evaluation Matrix for Rangeland Health

State TX **Office** San Angelo ZO **Ecological Site** Clay Loam 29-35" PZ **Site ID** R081CY357TX
Author(s) San Angelo ZO **Date** 6/27/05

INDICATOR	EXTREME	MODERATE TO EXTREME	MODERATE	SLIGHT TO MODERATE	NONE TO SLIGHT
1 - RILLS	Rill formation is severe and well defined throughout most of area.	Rill formation is moderately active and well defined throughout most of the area.	Active rill formation is slight at infrequent intervals, mostly in exposed areas.	No recent formation of rills; old rills have blunt or muted features.	None
2 - WATER FLOW PATTERNS	Extensive and numerous; unstable with active erosion. Flow patterns usually connected.	More numerous than expected; deposition and cut areas common. Flow patterns occasionally connected.	Nearly matches what is expected for the site; erosion is minor with some instability. Some deposition occurring.	Matches what is expected for the site; some evidence of minor erosion. Flow patterns are stable and short.	Some minimal flow patterns may be evident at the juncture of the associated sites.
3 - PEDESTALS and/or TERRACETTES (Wind or Water)	Abundant active pedestaling (1/4" - 1" height) and numerous terracettes. Most rocks and plants are pedestaled; exposed roots are common.	Moderate active pedestaling; terracettes common. Some rocks and plants are pedestaled with occasional exposed roots.	Slight active pedestaling; (1/4" height) most pedestals are in flow paths and interspaces and/or on exposed slopes. Occasional terracettes present.	No indications of active pedestaling or terracette formation; some evidence of pedestal formation especially in flow paths and/or from wind on exposed slopes.	None
4 - BARE GROUND	Amount of bare ground much higher than expected for the site. Bare areas are large and connected (>20%).	Amount of bare moderately higher than expected for the site. Bare areas are large and occasionally connected.	Amount of bare ground moderately to slightly higher than expected for the site (5-10%). Bare areas are of intermediate size and sporadically connected.	Amount of bare ground slightly higher than expected for the site. Bare areas are small and rarely connected.	None.

INDICATOR	EXTREME	MODERATE TO EXTREME	MODERATE	SLIGHT TO MODERATE	NONE TO SLIGHT
5 - GULLIES	Present with indications of active erosion, vegetation is infrequent on slopes and/or bed. Nickpoints and headcuts are numerous and active.	Present with indications of active erosion, vegetation is intermittent on slopes and/or bed. Headcuts are active; downcutting is not apparent.	Moderate in number with indications of active erosion, vegetation is intermittent on slopes and/or bed. Occasional headcuts are evident.	Uncommon, vegetation is stabilized on bed and slopes; no signs of active headcuts, nickpoints, or bed erosion.	None.
6 - WIND SCOURED AREAS	Wind scoured areas extensive with exposed roots common.	Wind scoured common with some exposed roots.	Occasional wind scoured areas with some exposed roots.	Infrequent evidence of wind scoured areas or exposed roots.	Soil surface is resistant to wind erosion. Stability range is expected to be 5-6
7 - LITTER MOVEMENT	Extreme; litter concentrated around obstructions. Most size classes of litter redistributed by wind or water and has moved over a foot.	Extreme to moderate; loosely concentrated near obstructions. Moderate to small size classes of litter redistributed by wind or water.	Moderate litter (smaller size) movement(1-3 inches) in scattered concentrations around obstructions and in depressions.	Slightly more than expected for the site with only small size classes of litter being redistributed.	Little or no litter movement or deposition during normal rainfall events, rarely over 6 inches.
8 - PHYSICAL & CHEMICAL SOIL CRUSTS	Bare areas have thick and widespread physical or chemical crusts.	Bare areas have moderately thick widespread physical or chemical crusts.	Bare areas have thin and widespread to scattered physical or chemical crusts.	Bare areas have "soft" and scattered physical or chemical crusts.	Soil surface is resistant to wind erosion. Stability range is expected to be 5-6.
9 - SOIL SURFACE ORGANIC MATTER	Surface organic layer rarely present and then only in association with protected areas.	25-50% of the surface organic layer is absent.	Less than 25% of the surface organic matter is absent. The A horizon is still intact.	Some signs of past loss of surface organic matter with stable surface now.	0 to 3.1 inches; brown (7.5YR 4/2) dry, loam; dark brown; 3.1 to 18.1 inches; dusky red (2.5YR 3/2) dry, clay;18.1 inches; very slightly effervescent by HCl

INDICATOR	EXTREME	MODERATE TO EXTREME	MODERATE	SLIGHT TO MODERATE	NONE TO SLIGHT
10 - PLANT COMMUNITY AND COMPOSITION & DISTRIBUTION RELATIVE TO INFILTRATION & RUNOFF	Infiltration is severely decreased due to adverse changes in plant community composition and/or distribution. Adverse plant cover.	Infiltration is moderately decreased due to adverse changes in plant community composition and/or distribution. Detrimental plant cover changes have occurred.	Infiltration is somewhat reduced due to adverse changes in plant community composition and/or distribution. Plant cover changes negatively affect infiltration.	Infiltration relatively unaffected by minor changes in plant community composition and/or distribution. Plant cover changes have only a minor effect on infiltration.	The tallgrass/midgrass savanna with abundant forbs, adequate litter, and little bare ground provides for maximum infiltration and negligible runoff
11 - COMPACTION LAYER	Extensive with >1" depth, severely restricts water movement and root penetration.	Widespread with with >1" depth, greatly restrict water movement and root penetration.	Moderately wide-spread, <1" depth, moderately restricts water movement and root penetration.	Occurs infrequently or is thin and weakly restrictive to water movement and root penetration.	None
12 - PLANT FUNCTIONAL & STRUCTURAL GROUPS	Wam season mid grasses (D) > Trees/shrubs/vines > cool season grasses (S) > warm season short grasses (S) = forbs.	Dominant plant functional groups represented by scattered few individual species. Less dominant functional groups now dominate the site. Plant functional groups not present in historic plant community are common. Number of species in most functional groups are low.	Warm season mid grasses (S) > warm season short grasses (S) > Trees /shrubs/vines(S) > warm season tall grasses (S) > cool season grasses (s) > forbs	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 in most functional groups is nearly equal to that expected for the site.	Warm season Tallgrass (D) >> Wam Season midgrasses (S) > Trees(M) > Forbs > Cool Season Grasses > Shrubs > Warm Season Short Grasses.

INDICATOR	EXTREME	MODERATE TO EXTREME	MODERATE	SLIGHT TO MODERATE	NONE TO SLIGHT
13 - PLANT MORTALITY	Dead and/or decadent plants common.	Dead plants and/or decadent plants are somewhat common.	Some dead and/or decadent plants are present.	Slight plant mortality and/or decadence.	Perennial grasses will naturally exhibit a minor amount (less than 5%) of senescence and some mortality every year.
14 - LITTER AMOUNT	Litter largely absent relative to site potential and weather. (< 80%)	Litter present but amount greatly reduced relative to site potential and weather.	Litter present(90% cover @ 1 inch depth) but moderately more or less relative to the site potential and weather.	Litter amount slightly more or less relative to site potential and weather.	>90 percent litter, 0.5 to 3 inch depth.
15 - ANNUAL PRODUCTION	Productivity less than 20% of potential production.	Productivity 20-40% of potential production.	Productivity 40-60% of potential production.	Productivity 60-80% of potential production.	2800 to 4300 pounds per acre
16 - NOXIOUS & INVASIVE PLANTS	Dominate the site. >30% canopy.	Common throughout the site.	Scattered throughout the site but generally 10-20% canopy.	Present primarily in disturbed areas.	Ashe juniper, baccharis, pricklypear, yucca, tasajillo, pricklyash, lotebush, mesquite, King Ranch bluestem
17 - REPRODUCTIVE CAPABILITY OF PERENNIAL PLANTS	Ability of plants to produce seed or vegetative tillers is severely reduced relative to recent climatic conditions.	Ability of plants to produce seed or vegetative tillers is greatly reduced relative to recent climatic conditions.	Ability of plants to produce seed or vegetative tillers is somewhat limited relative to recent climatic conditions.	Ability of plants to produce seed or vegetative tillers is only slightly limited relative to recent climatic conditions.	All perennial species should be capable of reproducing every year unless disrupted by extended drought, overgrazing, wildfire, insect damage, or other events occurring immediately prior to or