USDA Natural Resources
Conservation Service

Ecological site R035XA106AZ
Clayey Upland 10-14" p.z.

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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.

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Approved by	Byron Lambeth
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to very few. A few rills may form on the steeper slopes due to the very slow permeability of the soil and the medium runoff.

2. **Presence of water flow patterns:** Some water flow patterns and ponding areas are possible due to the very slow permeability of the soil, the medium runoff, the shrink/swell characteristics, and the physical crust on the surface, especially on the steeper slopes.

3. **Number and height of erosional pedestals or terracettes:** A few pedestals and terracettes may form on the steeper slopes due to the very slow permeability, medium runoff, and the shrink/swell characteristics of the soils.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** This site should have a moderate amount of bare ground (range 20-50%). The moderate available water capacity (7 inches average) gives the site the potential to produce a moderate percentage of plant cover. Areas with a cover of rock fragments will have less bare ground. Drought may cause an increase in bare ground.

5. **Number of gullies and erosion associated with gullies:** None.

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

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7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous and fine woody litter will be transported in the water flow pathways. Coarse woody litter will remain under shrub and tree canopies.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Average site stability rating of 5 expected. Soil surface texture is clay. Most surface horizons are cobbly, but a few are stony and few do not have any fragments. The soils contain shrink/swell clays, so there are many large cracks on the surfacewhen the soil is dry. There may be a 1/4" physical crust on the surface. When well vegetated and protected by surface rock armor, these soils have a moderate to high resistance to water erosion and a high resistance to wind erosion.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is granular (moderate to strong, very fine to fine). Surface thickness ranges from 1 to 5 inches. Color is variable depending upon parent material.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This site is characterized by a relatively even distribution of grasses with some shrubs and trees. Both canopy and basal cover values (especially canopy cover) decrease during a prolonged drought. This type of plant community is moderately effective at capturing and storing precipitation.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. The surface 3 to 5 inches may be easily compacted in some areas, but the compacted layers may be broken up by the shrink/swell action of the soils. Many of the soils are protected from compaction by surface rock cover or rocks within the surface horizon.

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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 bunchgrasses >>

    Sub-dominant: Warm season colonizing grasses = Shrubs > Cool season bunchgrasses > Cool season colonizing grasses = Forbs

    Other: Trees > Cacti

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All plants functional groups are adapted to survival in all but the most severe droughts. Severe winter droughts affect shrubs the most. Severe summer droughts affect grasses the most.

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14. **Average percent litter cover (%) and depth (in):** Mostly herbaceous litter with some woody litter. Litter amounts increase during the first few years of drought, then decrease in later years.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production on this site is expected to be 450 to 650 lbs/ac. in a year of average annual precipitation.

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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:** Broom snakeweed, cacti, and juniper are native to the site, but have the potential to increase and dominate the site. The decline of perennial herbaceous ground cover and increase of bare ground allows for the invasion of native and non-native annuals.

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17. **Perennial plant reproductive capability:** All plants native to this site are adapted and are capable of producing seeds, stolons and rhizomes in all but the most severe drought.
