USDA Natural Resources
Conservation Service

Ecological site R041XB204AZ
Clay Loam Upland 8-12" 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	Curtis Talbot
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 paths occupy less than 5% of the surface area. Sheet flow predominates as a process on this site with water flow patterns generated from sheet flow off bare areas. Sheet flow lengths are less than 10 feet. Vegetated areas are densely covered with no visible flow patterns.

3. **Number and height of erosional pedestals or terracettes:** Pedestals are infrequent on all longer lived grasses and sub-shrubs. Terracettes are not common on the site.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** ESD cover ranges for bare soil is 5-75%, gravel ranges from 15-50% and basal cover of live perennial grasses is 1-3%. Bare areas not covered by perennial plant canopy are moderately sized (2-3 ft in diameter) and generally connected. Bare areas make up approximately 50% of the area.

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):** Fine litter size classes are moving less than a foot in sheet flow areas. Coarse litter stays in place.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Values from soil slake test score 2-3 on bare areas and 4-6 from protected areas.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A horizon is a gravelly sandy loam 0.5 inches thick, structureless. Colors are 5 YR 5/4 dry and 5 YR 3/4 moist.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial grasses dominate the site. Hydrology functions are sheet flow run-off originating on bare areas, run-off slowing and infiltration occurring within perennial grass patches. Total canopy cover approximately 40-45%. Perennial grass canopy = 27-37%, succulent canopy = 1-5%, shrubs and half-shrubs = 1-5%. Annual grass canopy fluctuates with seasonal rainfall; canopy cover can exceed 40% and mask the vegetation distribution pattern. Perennial grasses exhibit patch-distribution with scattered shrubs and succulents.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None present, average depth of penetration from an ARS field penetrometer with a 2.2 kg. sliding hammer is 5.1 cm. The dense argillic horizon at 3 inches can be mistaken for a compacted layer.

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: Dominant perennial grass (tobosa)>

    Sub-dominant: > miscellaneous perennial grasses = perennial three-awns = dominant shrubs >/= annual forbs >/= annual grasses >

    Other: > half-shrubs, succulents, misc.shrubs, perennial forbs

    Additional: annual grasses and forbs can fluctuate within ranking based on seasonal precipitation

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Mortality due to drought (2009 and very dry winter spring of 2011) about 20% on cane cholla. All other species show only natural rates of approximately 5-10% mortality.

14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 10-75% on this site. Litter cover was 65% on this date. Ground cover was collected as point cover data concurrently with pace frequency method (300 pts).

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-**

production): 147 lbs/ac. in a below average year; 300 lbs/ac. in an average year; 785 lbs/ac. in an above average year. Production of summer annual grasses can exceed expected on years with above average seasonal 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:** Cholla and prickly pear common across site with about 300 plants per acre amounting to 4% canopy cover. Mesquite is scattered across site at 1% canopy cover and with a density of 25 plants per acre. Other invasive species: Lehmann lovegrass and Boers lovegrass.

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17. **Perennial plant reproductive capability:** Not impaired on any species.
