USDA Natural Resources
Conservation Service

Ecological site R053AE071MT
Saline Upland (SU) (Legacy) RRU 53AE

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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	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present in HCPC. On slopes at or > 8%, in plant community A, rills would be visible, ½ inch deep or more, linear, rarely exceeding 1 foot in length. Distance between rills is irregular.

2. **Presence of water flow patterns:** Water flow patterns should not be present in HCPC. On slopes at or > 8%, in plant community A, water flow patterns would be visible as long (more than 1feet) and continuous across the landscape.

3. **Number and height of erosional pedestals or terracettes:** Pedestals or terracettes would essentially be nonexistent in HCPC. On slopes at or than 8%, if in plant community A, pedestals and terracettes are frequent and ½ - ¾ inch above the soil surface.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 40-50% of the soil surface could be bare in HCPC. If in plant community A, 45-60% of the soil surface can be exposed.

5. **Number of gullies and erosion associated with gullies:** Gullies are not evident in any of the State 1 reference plant communities.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, blowouts and/or depositional areas are not evident in any of the State 1 reference plant communities.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is not expected with HCPC. On slopes > 8%, in plant community A, litter, both fine and coarse, movement is visible, into depressions or natural obstacles.

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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):** Stability class anticipated to be 4 or 5 under plant canopy. In all State 1 reference plant communities, soil stability class is expected to be 2 or 3 from the large interspaces.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface layer is usually 0-2” deep and typically have clay loam and silty clay. Surface color is light brownish gray. Soil organic matter ranges from 0.5-2%.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** In HCPC,, 40-50% plant canopy and 30-50% basal cover with small gaps between plants should reduce raindrop impact and slow overland flow, providing increased time for infiltration to occur. Healthy, deep rooted native grasses enhance infiltration and reduce runoff. Infiltration rate is very slow. If in plant community A, 20-30% plant canopy and 30-40% basal cover with large gaps between plants, amplifies raindrop impact and increases overland flow. The site tends to be more xeric as runoff increases. Because of the high sodium content, exposed soil can develop a hard crust as the sodium disperses the soil particles.

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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):** No compaction layer should be evident in any of the State 1 plant communities.
    Restrictive, very hard claypan begins at 4 - 6 inches.

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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: HCPC: Mid-stature, cool season rhizomatous grasses> mid stature, warm season bunch grasses> short warm season rhizomatous grasses > shrubs > forbs. Plant community A: Mid-stature, cool season rhizomatous grasses> short warm season rhizomatous grasses > mid stature, warm season bunch grasses > shrubs > forbs.

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant mortality and decadence very low in HCPC and Plant community A. In periods of drought, shrubs

would exhibit decadence in the state 1 reference communities

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14. **Average percent litter cover (%) and depth (in):** Litter cover is in contact with soil surface. Litter decreases in Plant community A to 30-40% and depth is immeasurable.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 350 - 600 #/acre.

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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:** Blue grama, inland saltgrass, bottlebrush squirreltail, poverty weed, knotweeds, plains prickly pear, broom snakeweed, greasewood.

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17. **Perennial plant reproductive capability:** All species have a somewhat restricted ability to reproduce in HCPC. In Plant community A, plant seedlings will be weighed in favor of marginal and undesirable species. Replacement of desirable species will be very few.
