USDA Natural Resources
Conservation Service

Ecological site R053AE070MT
Subirrigated (Sb) (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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Date	03/30/2005
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 any of the State 1 reference plant communities.

2. **Presence of water flow patterns:** Water flow patterns should not be observable in any of the State 1 reference plant communities.

3. **Number and height of erosional pedestals or terracettes:** Pedestals or terracettes would essentially be nonexistent in any of the State 1 reference plant communities.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground would essentially be nonexistent in HCPC. Bare ground should be less than 2” in diameter. If in plant community A, less than 5% of the soil surface can be exposed. In plant community B, 10% bare ground may be exposed.

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

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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 5 or 6 under plant canopy.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface layer varies from 0-3” deep to 0-12” deep. The color is usually dark brown. Surface textures include loam, silt loam, clay loam, or sandy loam. Soil organic matter ranges from 2-4%.

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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, 90-95% plant canopy and 80-85% 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 moderate to very slow. If in plant community A, 90-95% plant canopy and 70-80% basal cover with small gaps between plants will still reduce raindrop impact and decrease overland flow. If in plant community B, 40-70% plant canopy and 50-75% basal cover with moderate gaps between plants, intensifies raindrop impact and increases overland flow.

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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 or soil surface crusting should be evident in either of the State 1 plant communities.

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

    Sub-dominant: Plant community B: Mid-stature, cool season rhizomatous grasses > mid-stature cool season bunch grasses > sedges and rushes > forbs > shrubs.

    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, all plants 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 40-50% and depth is reduced to 0.5 inch.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 3500 - 5000 #/acre from Plant community A to HCPC in the State 1 reference community.

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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:** Smooth bromegrass, Kentucky bluegrass, Canada bluegrass, Baltic rush, leafy spurge and Canada thistle.

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17. **Perennial plant reproductive capability:** All species are capable of reproducing 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.
