USDA Natural Resources
Conservation Service

Ecological site R069XY011CO
Closed Depression

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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:** None.

2. **Presence of water flow patterns:** None. Minor water flow patterns may be present on bare areas resulting from ponded water, however they will be short and disconnected.

3. **Number and height of erosional pedestals or terracettes:** None.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** The amount of bare ground is minimal due to excellent plant and litter cover on the soil surface. Expect bare ground to be two to five percent.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None. Minor wind scour may be present on bare areas

resulting from ponded water, the extent will be correlated to the size of the bare area.

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7. **Amount of litter movement (describe size and distance expected to travel):** None. Expect minimal to very short movement of small sized herbaceous litter during intense rainfall events.

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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 rating anticipated to be five to six in interspace at soil surface. These values need verification at reference site.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A horizon is zero to three inches deep, brown, loam, moderate fine granular structure with common very fine and fine roots. EB horizon 3-11 inches, 60percent gray & 40 percent brown, loam, weak medium subangualar blocky structure, common very fine and fine roots. SOM content is unspecified for either the A or EB soil horizons.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Diverse grass, forb and shrub functional/structural groups and diverse root structure/patterns reduces raindrop impact and slows runoff providing increased time for infiltration to occur.

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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):** Usually none. Soil horizon 2Bssg (argilic) at 11-34 inches extremely hard and may be mistaken as a compaction layer. Expect this soil horizon to commonly exhibit very fine roots.

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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: Cool-season rhizomatous grasses >

    Sub-dominant: Warm-season mid-height grasses > Warm-season short-height grasses > shrubs >

    Other: Warm-season forbs > Cool-season forbs > Warm-season short-height rhizomatous grass = Cool-season mid-height bunchgrasses = sedges

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Typically minimal. Expect short and mid-height bunchgrass mortality and decadence during and following drought.

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14. **Average percent litter cover (%) and depth (in):** Expect litter cover to decrease to 20-30 percent during and following extended drought.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 500 pounds per acre in low precipitation years, 1100 pounds per acre in average precipitation years, and 1700 pounds per acre in above agerage precipitation years. After extended drought or the first growing season following wildfire, prduction may be significantly reduced by 250-350 pounds per 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:** Invasive plants should not occur in the reference plant community.

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17. **Perennial plant reproductive capability:** The only limitations are weather related and wildfire incidents.
