USDA Natural Resources
Conservation Service

Ecological site R013XY020ID
Loamy Tall Brush 16-22 PZ ACGL/BRMA4

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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	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills are rare on this site. If rills are present they are likely to occur immediately following wildfire. Rills are most likely to occur on soils with silt loam surface textures.

2. **Presence of water flow patterns:** water-flow patterns are rare on this site. When they occur, they are short and disrupted by cool season grasses and tall shrubs and are not extensive.

3. **Number and height of erosional pedestals or terracettes:** both are rare on this site. In areas where flow patterns and/or rills are present, a few pedestals may be expected. When present, terracettes occur on the site uphill from tall shrub bases and large bunchgrasses. They are not extensive.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available. On sites in mid-seral status bare ground may range from 5-15 percent.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move up to 2 feet following a significant run-off event. Coarse litter generally does not move. Stones on the surface help reduce fine litter movement.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** values should range from 4 to 6 but needs to be tested.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** structure ranges weak and moderate very fine, fine and medium granular to weak fine, medium and coarse subangular blocky. Soil organic matter (SOM) ranges from 60 to 95 percent. Surface color is generally very dark brown. The A or A1 horizon is typically 3 to 11 inches thick.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** bunchgrasses, especially deep-rooted perennials, slow run-off and increase infiltration. Tall shrubs catch blowing snow in the interspaces and significantly reduce raindrop impact.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** not present.

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: tall shrubs

    Sub-dominant: cool season deep-rooted perennial bunchgrasses

    Other: perennial forbs

    Additional: shallow rooted bunchgrasses

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Rocky Mountain maple will become decadent in the absence of normal fire frequency. Grass and forb mortality will occur as tall shrubs increase.

14. **Average percent litter cover (%) and depth (in):** additional litter cover data is needed but is expected to be 40 to 60 percent to a depth of 0.2 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 3000 pounds per acre (3360 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 15-25 percent of the total production, forbs 5-15 percent and shrubs 65-75 percent.

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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:** includes rush skeletonweed, tansymustard, Jim Hill tumblemustard, yellow salsify, musk and scotch thistle, diffuse and spotted knapweed, peppergrass, broom snakeweed, Canada thistle, leafy spurge, and Kentucky bluegrass.

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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years.
