

Ecological site R048AA228CO Mountain Loam Gunnison Basin LRU

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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 to slight on slopes of less than 15 percent. Rills may be more defined on slopes of more than than 15 percent. After intense storms, wildfires, and extended periods of drought the number of rills will increase.

2. **Presence of water flow patterns:** Slight. Few water patterns, and short, unconnected flow patterns. Flow patterns present only after an intense weather event. The length and abundance of flows increases after wildfires and extended periods of drought. Flow paths are more apparent on slopes of more than 15 percent.

3. **Number and height of erosional pedestals or terracettes:** None to slight. No pedestals or terracettes caused by water should occur in the reference community phase of this site. Wind-caused patterns are rare; they commonly only occur after wildfires and extended periods of drought. Water from intense storms may cause slightly more pedestals on the steeper slopes.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Commonly, 10 to 20 percent of the ground is bare. Extended drought and other disturbances may result in more bare ground.

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5. **Number of gullies and erosion associated with gullies:** Rare. In areas of drainageways, the gullies are stabilized by native vegetation and thus are not subject to erosion.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Little, if any, wind erosion occurs in this site; however, significant wind erosion may occur after wildfires and extended periods of drought. Areas of wind scouring, blowouts, and depositional areas are rare; they are associated with disturbances only (e.g., bedding areas and small mammal burrows).
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7. **Amount of litter movement (describe size and distance expected to travel):** Litter commonly is evenly distributed across the site, but it is slightly thicker under the shrub canopy. Litter movement consists primarily of redistribution of fine litter (herbaceous plant material) associated with flow paths. Movement is expected to be short-lived and minimal. Most occurs after wildfires, extended periods of drought, and other disturbances. High-intensity thunderstorms may increase the amount of movement and the size of material moved.
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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):** The stability class is 1 to 3 in unprotected areas in interspaces. Under a canopy of shrubs or grasses, it is 4 to 6. The class should be at the higher range in soils that have a higher content of clay.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The average content of soil organic matter is 2 to 5 percent. The surface layer typically is granular. This layer is stable; evidence of movement is very slight. The soils typically are moderately deep or deep and well drained.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The diverse canopy of grasses, forbs, and shrubs and their root structure reduce the impact of raindrops and slow overland flow, providing time for infiltration to occur. Extended periods of drought in spring reduce the abundance of cool-season bunchgrasses, which results in decreased infiltration and increased runoff following intense storms.
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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):** None.
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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: Dominant native non-sprouting shrubs > Subdominant native cool-season bunchgrasses > Dominant native cool-season bunchgrasses > Occasional native cool-season bunchgrasses
- Sub-dominant: Dominant native perennial forbs > Occasional native perennial forbs > Subdominant native cool-season Rhizomatous
- Other: Subdominant native sprouting shrubs > Occasional native non-sprouting shrubs > Occasional native warm-season bunchgrasses

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Typically minimal. Slight mortality or decadence of shrubs and grasses may occur during and following drought. Extended periods of drought typically results in a relatively high mortality rate in short-lived species. Mortality of shrubs is limited to periods of severe drought. Sagebrush species are affected by a lack of snow in winter. A combination of wildfire and extended periods of drought would cause more mortality for several years than would either disturbance by itself.
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14. **Average percent litter cover (%) and depth (in):** The reference community averages 40 to 60 percent litter under the shrub canopy and 15 to 35 percent in the interspaces. The content of litter in the interspaces declines during and following droughts. No litter remains after wildfires and extended periods of drought. Depending on climate and plant production, post-disturbance levels of litter will be in the site within 1 to 5 growing seasons.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 900 pounds per acre in low precipitation years, 1,300 pounds in average precipitation years, and 1,700 pounds in above-average years. After extended periods of drought or during the first growing season following a wildfire, production may be significantly reduced by 600 to 800 pounds per acre or more.
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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:** None.
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17. **Perennial plant reproductive capability:** All plant species should be able to reproduce if water is available. All plants should be vigorous and healthy. Plant should produce seed heads and vegetative tillers, etc. Weather, wildfire, natural disease, interspecies competition, wildlife, and insects may temporarily reduce reproduction.
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