

Ecological site R011XY001ID Loamy 8-12 PZ

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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	Brendan Brazee
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills rarely occur on this site. If they do occur they are most likely to be on slopes greater than 15% and immediately following wildfire but remain short (<3 feet) and shallow (<1 inch), generally equating to the distance of burned shrub patches. When present, gravels on the surface reduce erosion.

2. **Presence of water flow patterns:** Water-Flow Patterns rarely occur on this site. On slopes greater than 15% a few water flow patterns may be present, but they are short and disconnected, disrupted by cool season perennial grasses and tall shrubs and are not extensive. After wildfires, water-flow patterns may be longer (2-4 ft. generally the distance of shrub canopies that were burned) on slopes >15% where they may initiate from burned shrub patches if fire intensity is high enough to burn the duff and all woody material.

3. **Number and height of erosional pedestals or terracettes:** Pedestals and/or Terracettes are rare to nonexistent on this site. In areas susceptible to wind and on slopes greater than 15% where flow patterns and/or rills are present, a few pedestals and terracettes may be expected after a wildfire, but these should be less than ½ inch and should not expose roots.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 5 - 20% cover (top layer cover data). Bare areas should be small and scattered

across the site; harvester ant mounds and small mammal burrows may cause isolated patches to exceed 5 ft. in diameter. Playettes (slickspots) are common and can range in size from 2 to 30 feet, and may be connected.

5. **Number of gullies and erosion associated with gullies:** Gullies do not occur on this site.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind-Scoured, Blowouts, and/or Deposition Areas are usually not present. In rare occasions scouring may be associated with harvester ant discs or rodent burrows. After one growing season post-fire, herbaceous cover should be sufficient to protect the site from wind erosion.

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

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface stability values should be >4. Soil disturbances associated with rodent burrows and ant mounds will create values near 1.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface horizon is typically 2 to 7 inches thick. Structure typically includes weak thin and moderately thick platy, weak fine and moderate fine granular, and weak fine to medium sub-angular blocky. Soil organic matter (SOM) ranges from 0.5 to 4 percent.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant Community Composition and Distribution Relative to Infiltration: Deep-rooted perennial bunchgrasses and shrubs are distributed to catch snow, slow run-off, and increase infiltration.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Compaction Layer: 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: Dominant: cool season deep-rooted perennial bunchgrasses; >>

Subdominant: shrubs (non-sprouting); >

Minor: shallow rooted perennial grasses; =

Minor: forbs; >

Trace: native annual grasses

After fire

Dominant: cool season deep-rooted perennial bunchgrasses, >>

Minor: shallow rooted grasses; >=

Minor: perennial forbs; >

Trace: shrubs (non-sprouting); =

Trace: native annual grasses

Additional: Biological soil crusts should cover most interspaces among perennial plants and be common under shrubs except after wildfires, when they will be consumed under shrubs and other plants, but should remain in interspaces.

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Wyoming big sagebrush may show some dead branches as plants age and experience insect defoliation or snow molds. Dead centers may occur in bunchgrasses.
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14. **Average percent litter cover (%) and depth (in):** Total litter cover will be 30 - 40 percent to a depth of <0.1. Under mature shrubs litter is greater than 0.5 inches.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual Production is 700 lbs. per acre in a year with normal precipitation and temperatures. Low and high production years should yield 400 and 900 lbs/ac. Perennial grasses produce 45-55 percent of the total, forbs 10-20 percent, and shrubs 25-35 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:** This includes 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, these species are NOT expected in the reference state for the ecological site: cheatgrass, burr buttercup, spotted and diffuse knapweed, Russian knapweed, scotch thistle, Canada thistle, among others.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in normal or above normal years.
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