

Ecological site R067BY039CO Shallow Siltstone

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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

- Number and extent of rills:** Typically none. If present, rills may occur on siltstone outcrop areas.

- Presence of water flow patterns:** Typically none on gentle slopes. Water flow paths associated with siltstone outcrop areas may be connected.

- Number and height of erosional pedestals or terracettes:** Siltstone outcrops may have pedestalled plants.

- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 3 percent or less bare ground, with bare patches generally less than 2-3 inches in diameter where slopes are gentle. Extended drought can cause bare ground to increase upwards to 10-20 percent with bare patches reaching upwards to 6-12 inches in diameter. A significant amount of exposed siltstone is inherent to steeper slopes and would be considered rock outcrop.

- Number of gullies and erosion associated with gullies:** None to some on steeper slopes.

- Extent of wind scoured, blowouts and/or depositional areas:** None to some on exposed slopes.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter should be uniformly distributed with little movement. On steep slopes or knolls, litter may move from a few inches to 1-2 feet depending on intensity of storm.
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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 is anticipated to be 2-4 in the interspaces at soil surface.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Average SOM is 0.5-1 percent. Surface texture is typically a silt loam. A-horizon ranges from 0-5 inches. Soils are shallow, light gray, weak fine crumb grading to weak fine granular structure. Many siltstone chips occur on the surface.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Raindrop impact is reduced by the diverse grass, forb, shrub functional/structural groups and root structure. This slows overland flow and provides increased time for infiltration to occur. Extended drought, wildfire or both may reduce basal density, canopy cover, and litter amounts (primarily from tall, warm-season bunch and rhizomatous grasses), resulting in decreased infiltration and increased runoff on steep slopes following intense rainfall events.
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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: Warm-season short bunchgrass = cool-season mid rhizomatous >
- Sub-dominant: Warm-season mid bunchgrass > cool-season mid and short bunchgrass and grasslikes > shrubs > leguminous forbs >
- Other: Warm-season forbs > cool-season forbs > warm-season tall bunchgrass > warm-season short stoloniferous
- 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 slight mortality and decadence during and following extended drought.
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14. **Average percent litter cover (%) and depth (in):** 30-45 percent litter cover at 0.25 inch depth on gentle slopes and 5-15 percent on steeper slopes.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 500 lbs./ac. during low precipitation years; 800 lbs./ac. in average years; 1000 lbs./ac. in above average

years. After extended drought or the first growing season following wildfire, production may be reduced by 200 – 400 lbs./ac.

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 reference plant community. Cheatgrass, Russian thistle, burningbush, other non-native annuals may invade following extended drought or fire assuming a seed source is available.
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17. **Perennial plant reproductive capability:** The only limitations are weather-related, wildfire, natural disease, and insects that may temporarily reduce reproductive capability.
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