

Ecological site EX044B01B131 Shallow Clay (SwC) LRU 01 Subset B

Last updated: 9/11/2023
Accessed: 05/04/2024

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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Date	05/04/2024
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** Rills will not be evident on lesser sloping Reference Communities. Steeper slopes (greater than 30%) may have rills particularly after extreme weather events however they will remain short

- 2. Presence of water flow patterns:** Water flow patterns are not be evident on lesser sloping reference communities however will likely be evident on slopes greater than 30% however they will be short

- 3. Number and height of erosional pedestals or terracettes:** Steep slopes (greater than 30%) may contain both pedestals and terracettes as a result of slow infiltration and higher run-off. Height of either will not exceed $\frac{3}{4}$ " tall.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is less than 25%.

- 5. Number of gullies and erosion associated with gullies:** Gullies are not present in the reference condition.

- 6. Extent of wind scoured, blowouts and/or depositional areas:** Wind scoured, or depositional areas are extremely rare in the reference condition.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement of fine herbaceous material is minimal, distance traveled is less than 1 foot in the reference condition.
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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 average soil stability rating is 5-6 under plant canopies and 4-6 in plant interspaces. The A horizon is 2-4 inches thick.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure will be weak, fine to strong medium granular. A Horizon should be 2-4 inches thick with color, when wet, typically ranging in Value of 5 or less and Chroma of 3 or less. Local geology may affect color in which it is important to reference the Official Series Description (OSD) for characteristic range.
<https://soilseries.sc.egov.usda.gov/osdname.aspx>
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Evenly distributed across the site, deep rooted bunchgrasses improve infiltration while rhizomatous grass protects the surface from runoff forces. Infiltration of the Shallow Clay ecological site is slow but well drained. An even distribution of mid stature bunchgrasses (65-70 percent of site production), cool season rhizomatous grasses (5-10 percent) with a mix of shortgrass (5-10 percent), forbs (1-10 percent) and shrubs (1-10 percent). Trees are rare on this site however may exist as a trace (less than 1 stem per acre)
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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):** A compaction layer is not present in the reference condition.
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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: Mid-statured, cool season, perennial bunchgrasses
- Sub-dominant: shortgrass/grasslikes = Rhizomatous grass > forbs ≥ shrubs > subshrubs >> trees/tall shrubs
- Other:
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Mortality in herbaceous species is not evident. Species with bunch growth forms may have some natural mortality in centers is 3% or less.
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14. **Average percent litter cover (%) and depth (in):** Total litter cover ranges from 35 to 45%. Most litter is irregularly distributed on the soil surface and is not at a measurable depth.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production is 1250 pounds per acre (lbs/ac) or 1401 kilograms per hectare (kg/ha)
Low: 1050lb/ac (1177 kg/ha)
High 1500 (1681 kg/ha)
Production varies based on effective precipitation and natural variability of soil properties for this ecological site.
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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:** Potential invasive (including noxious) species (native and non-native). Invasive species on this ecological site include (but not limited to) annual brome spp., spotted knapweed, yellow toadflax, ventenata, crested wheatgrass, Kentucky bluegrass, smooth brome
Native species such as rocky mtn Juniper, ponderosa pine, Douglas fir, broom snakeweed, rabbitbrush spp., big sagebrush, blue grama, etc. when their populations are significant enough to affect ecological function, indicate site condition departure.
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17. **Perennial plant reproductive capability:** In the reference condition, all plants are vigorous enough for reproduction either by seed or rhizomes in order to balance natural mortality with species recruitment.
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