USDA Natural Resources
Conservation Service

Ecological site DX032X01A141
Saline Upland Loamy (SUL) Big Horn Basin Core

Last updated: 2/22/2019
Accessed: 04/26/2024

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	12/19/2014
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present.

2. **Presence of water flow patterns:** Barely observable.

3. **Number and height of erosional pedestals or terracettes:** Essentially non-existent.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground averages between 35 and 45% in reference conditions.

5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present.

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement should occur. Plant littler remains in place and is not moved by erosional forces.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and littler average 50% or greater of the soil surface and maintains soil surface integrity. The soil stability class is found to average 3.8 ranging from 1 to 6.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The soil surface structure is fine moderate granular (moderate fine subangular or angular blocky parting to granular) with a surface depth of 2 to 7 inches (5- 15 cm). The dry surface Colors are generally in the 10YR to 7.5YR range with a Hue of 6 and a Chroma of 3. Organic matter in the surface ranges from 0.5 to 1.0.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow, providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is slow to moderate.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No compaction layer should be present. Slight crusting may be visible, but friable and does not impede infiltration rates.

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 stature Grasses > Shrubs

    Sub-dominant: Forbs > Short stature Grasses

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Is very low.

14. **Average percent litter cover (%) and depth (in):** Litter cover ranges from 6 to 20% with an average of 15% litter cover, reaching up to 44% including litter beneath the plants. Herbaceous litter depth typically ranges from 3-10 mm, and woody litter ranging from 2-6 mm.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** The site averages 350 lbs/acre in a normal year and can vary from 95 to 530 lbs in a wet year as seen in 2014.

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:** Cottonthorn (Spiny) Horsebrush, Greasewood, Birdfoot Sagebrush, Flatspine Stickseed, Mustards, and Woolly Plantain, Annual false wheatgrass, false buffalograss are native species that increase with stress; invasive species such as, but not limited to: Halogeton, Cheatgrass (Downy Brome), thistles, knapweed, Kochia, Russian Thistle are also found on this site.

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17. **Perennial plant reproductive capability:** All species are capable of reproducing.
