

Ecological site DX032X02W138 Saline Lowland (SL) Wind River Basin Wet

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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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| Date | 03/16/2021 |
| Approved by | Kirt Walstad |
| Approval date | |
| Composition (Indicators 10 and 12) based on | Annual Production |

Indicators

- 1. Number and extent of rills:** Rills should not be present on this site.

- 2. Presence of water flow patterns:** Water flow patterns are barely observable on the soil. Vegetation may lay over (lodging) following a high flow/overflow event, but soil flow patterns should not be visible.

- 3. Number and height of erosional pedestals or terracettes:** Overflow events tend to create very minor pedestals on the bases of bunchgrasses even in reference condition. However, these are very slight and are 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 is typically 15 to 25 percent occurring in small areas throughout site. Patch dynamics of bare ground is minimal in this ecological site, with bare ground patches occurring as less than 12 inches in diameter across the extent.

- 5. Number of gullies and erosion associated with gullies:** Active gullies should not be present. Evidence of pre-existing headcutting may be present, but active or new headcutting should not be present.

6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence of wind scour or blowouts should be present. Minor areas of sediment deposition from spring flooding may be present, but should not completely bury the current community.

7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement is seen with general precipitation events. Following spring flood events, small debris deposits or dams may be present from off sight locations, but on site litter should show little movement.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and litter is at 70 percent or greater of soil surface and maintains soil surface integrity. Soil aggregate stability ratings should typically be anticipated to be 4 ranging from 2 to 5. Surface organic matter adheres to the soil surface. Soil surface peds will typically retain structure indefinitely when dipped in distilled water. In the interspaces, ratings could be 0 to 3 if around 12 inches in diameter. Under canopy should be a rating of 2 to 4. Elevated salt content of these soils reduces the stability.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A-horizon should be 1 to 8 inches; pale brown (10YR 6/3) light clay loam dry, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; strongly effervescent; very strongly alkaline (pH 9.2); clear smooth boundary. In some instances, the A horizon may not be present or will be very thin, generally on active floodplains of perennial systems.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The potential vegetation is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. 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 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 or physical soil surface crusting should be present. Minor chemical crusting will be evident in barren interspaces as soils dry following extended wet periods.

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 Warm-season Bunchgrasses are greater than Tall-stature Cool season Bunchgrasses. Groups are comprised of two species each, and account for 44% of the composition by production.

Sub-dominant: Shrubs are equal to or greater than perennial native forbs. Groups are comprised of 1 and 2 prominent species respectively, and account for 31% of the composition by production.

Other: Rhizomatous Grasses are equal or greater than Short-stature Cool-season bunchgrasses. Groups are comprised of 1 species each, and account for 17% of the composition by production.

Additional: There are a total of 9 Functional/Structural Groups. (3 are trace). There are 5 dominant and sub-dominant species. Functional/Structural Groups not expected are Introduced annual grasses, perennial introduced and naturalized

grasses and annual forbs.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little evidence of decadence or mortality should be visible. Bunchgrasses have strong, healthy centers and shrubs have few dead stems.
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14. **Average percent litter cover (%) and depth (in):** Average plant litter cover is expected to be 25 to 35 percent with depths of 0.2 to 0.5 inches.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Reference (CP 1.1) Annual production ranges from a low of 700 to a high of 1600 pounds per acre (air dry basis). Normal annual production is 1200 pounds per acre in a year with normal precipitation and weather conditions. CP 1.2 Annual production ranges from 500 to 100 with Normal annual production averaging 875 pounds per acre.
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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:** Greasewood, rubber rabbitbrush, and inland saltgrass are natives that can be aggressive on this ecological site. Cheatgrass, mustards (brassicacae), Canada thistle, bull thistle, pennycress, salt cedar and Russian olive are known invaders. For other possible invaders or new species identified follow the Wyoming Weed and Pest Council website: <https://wyoweed.org/>
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17. **Perennial plant reproductive capability:** Salt-dependent species (inland saltgrass, alkali sacaton) express high vigor relative to recent weather conditions. Adapted or tolerant species will exhibit moderate vigor. All perennial grasses will have vigorous rhizomes or tillers; vegetative and reproductive structures may be slightly stunted in response to high salt content in soils. All perennial species should be capable of reproducing annually.
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