

Ecological site R066XY065NE Closed Depression

Last updated: 11/18/2024

Accessed: 05/21/2025

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.

Author(s)/participant(s)	Original Author: Stan Boltz Version V participants: Emily Helms, Nadine Bishop, Jeff Nichols
Contact for lead author	jeffrey.nichols@usda.gov
Date	11/18/2024
Approved by	Suzanne Mayne-Kinney
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None. Rills are not expected on this site.

2. **Presence of water flow patterns:** None. Water flow patterns are not expected on this site

3. **Number and height of erosional pedestals or terracettes:** None. Pedestals and terracettes are not expected on this site.

-
4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically 5 percent or less. After prolonged periods of ponding, bare ground may approach 35 percent with patch sizes of 12 to 18 inches (30 to 45 cm).

Bare ground is exposed mineral soil that is not covered by vegetation (basal and/or foliar canopy), standing dead vegetation, gravel/rock, and visible biological crust (e.g. lichen, mosses, algae).

5. **Number of gullies and erosion associated with gullies:** None. Gullies are not expected on this site.
-

6. **Extent of wind scoured, blowouts and/or depositional areas:** None. Wind-scoured areas and depositional areas are not expected on this site.
-

7. **Amount of litter movement (describe size and distance expected to travel):** Litter should fall in place. Slight amount of movement of fine litter (less than 12 inches or 30 cm) from water is possible as ponding recedes, but is not normal. Litter movement from wind is not expected.
-

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability ratings should typically be 4 to 6.
-

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A-horizon should be 3 to 14 inches (8 to 36 cm) thick. Soil is gray to light brownish gray, (values of 3 to 5) when dry and very dark gray, to black (values of 2 to 3) when moist. Structure ranges from moderate fine granular to moderate medium and coarse granular to weak fine subangular blocky..
-

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The functional/structural

groups provide a combination of rooting depths and structure which positively influences infiltration. Combination of shallow and deep rooted species (mid & tall rhizomatous and tufted perennial cool-season grasses) with fine and coarse roots positively influences infiltration. Invasion of introduced cool-season grasses such as annual bromes, Kentucky bluegrass, and smooth brome may have an adverse impact on infiltration and runoff. Woody encroachment may also negatively influence infiltration.

The expected composition of the plant community is 75 to 85 percent perennial grasses and grass-likes and 15 to 25 percent forbs. The perennial grass and grass-like component is made up of C3 rhizomatous grasses (20-85%); grass-likes (10-45%); C3, bunchgrasses (5-45%); and C4, shortgrasses (1-10%).

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. A compaction layer should not be present. When dry, the upper horizons can be hard and appear to be compacted, but no platy structure will be present. Heavy traffic (livestock or vehicular) when these soils are wet can produce a compaction layer.
-
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: Phase 1.1

1. Native, perennial, C3 rhizomatous grass, 700-2975 #/ac, 20-85% (1 species minimum): western wheatgrass.
2. Native forbs, 175-2100 #/ac, 5-60% (5 species minimum): American licorice, curlytop knotweed, Pennsylvania smartweed, Pursh seepweed, western dock and other species which vary from location to location.
3. Grass-likes, 350-1575 #/ac, 10-45% (3 species minimum): common spikerush, needle spikerush, sedges, rushes.
4. Native, perennial, C3 bunchgrass, 175-1575 #/ac, 5-45% (4 species minimum): foxtail barley, Nuttall's alkaligrass, slender wheatgrass, plains bluegrass, fowl bluegrass.

Phase 1.2

1. Native, perennial, C3 rhizomatous grass, 330-880 #/ac, 15-40% (1 species minimum): western wheatgrass.
2. Native, perennial, C4 shortgrass, 220-880 #/ac, 10-40% (1 species minimum): saltgrass, buffalograss.

3. Native forbs, 175-770 #/ac, 5-35% (8 species minimum): western dock, mint, Pursh seepweed, lambsquarters, curlytop knotweed, evening primrose, New England aster and other species that vary from location to location.
4. Grass-likes, 110-550 #/ac, 5 -25% (1 species minimum): common spikerush, needle spikerush, sedges, rushes.

Phase 1.3

1. Native, perennial, C3 rhizomatous grass, 330-880 #/ac, 15-40% (1 species minimum): western wheatgrass.
2. Native, perennial, C4 shortgrass, 220-880 #/ac, 10-40% (1 species minimum): saltgrass, buffalograss.
3. Forbs, 110-770 #/ac, 5-35% (7 species minimum): lambsquarters, Pennsylvania smartweed, curlytop knotweed, plantain, povertyweed, cocklebur, curly dock and other species that vary from location to location.
4. Grass-likes, 110-550 #/ac, 5 -25% (1 species minimum): common spikerush, needle spikerush, sedges, rushes.

Sub-dominant: Phase 1.2

1. Native, perennial, C3 bunchgrass, 110-440 #/ac, 5-20% (2 species minimum): foxtail barley, Nuttall's alkaligrass, slender wheatgrass, plains bluegrass, fowl bluegrass.

Phase 1.3

1. Native, perennial, C3 bunchgrass, 110-440 #/ac, 5-20% (2 species minimum): foxtail barley, Nuttall's alkaligrass, slender wheatgrass, plains bluegrass, fowl bluegrass.

Other: Minor - Phase 1.1

1. Native, perennial, C4 shortgrass, 35-350 #/ac, 1-10%: saltgrass, buffalograss.

Minor - Phase 1.2

1. Non-native, C3 grass, 22-220 #/ac, 1-10%: Kentucky bluegrass, cheatgrass

Minor - Phase 1.3

1. Non-native, C3 grass, 22-220 #/ac, 1-10%: Kentucky bluegrass, cheatgrass.

Additional: Reference Community (1.1) consists of five F/S groups. These groups are, in order of relative abundance, native, perennial, C3 rhizomatous grass; native forbs; grass-likes; native, perennial, C3 bunchgrass; native perennial, C4 shortgrass.

The Grass-like/Forbs Community (1.2) consists of six F/S groups which are in order of relative abundance native, perennial, C3 rhizomatous grass; native, perennial, C4 shortgrass; forbs; grass-likes; native, perennial, C3 bunchgrass; and non-native C3 grass.

The At-Risk Community (1.3) consists of six F/S groups which include native perennial, C3 rhizomatous grass; native, perennial, C4 shortgrass; forbs; grass-likes; perennial, C3 bunchgrass; and non-native C3 grass.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Bunchgrasses have strong, healthy centers with few (less than 3 percent) dead centers. Shrubs may show some dead branches (less than 5 percent) as plants age.
14. **Average percent litter cover (%) and depth (in):** Plant litter cover is evenly distributed throughout the site and is expected to be 55 to 80 percent and at a depth of 0.50 to 1.0 inch (1.25 to 2.6 cm).
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** The representative value (RV) for annual production is 3,500 pounds per acre on an air dry weight basis. Low and High production years should yield 2,000 and 4,500 pounds per acre respectively.
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:** No non-native invasive species are present. Canada thistle, annual bromes, smooth brome, Kentucky bluegrass, curly dock, and cocklebur are known invasives that have the potential to become dominant or co-dominant on this site. Consult the state noxious weed and state watch lists for potential invasive species.

Note: species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants.

17. **Perennial plant reproductive capability:** All perennial species exhibit high vigor relative to recent weather conditions. Perennial grasses should have vigorous rhizomes or tillers; vegetative and reproductive structures are not stunted. All perennial species should be capable of reproducing annually.
-