USDA Natural Resources
Conservation Service

Ecological site R102CY044NE
WET LAND

Last updated: 12/10/2024
Accessed: 05/12/2025

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.

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Date	12/04/2024
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 to occur 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 5 percent or less. During periods of above average precipitation and run-on, this site may be ponded for longer than normal durations and the typical vegetation will be temporarily reduced. This situation will create areas of bare ground for relatively short periods of time (1 growing season or less) after which early successional forbs, grasses, and grass-likes will occupy the site.

   Bare ground is exposed mineral soil that is not covered by vegetation (basal and/or foliar canopy), litter, 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 and/or depositional areas should not be present.

7. **Amount of litter movement (describe size and distance expected to travel):** None. Litter falls into place. Litter movement is not expected on this site.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability ratings will be 5 to 6, typically 6. There is typically a high root content and organic matter in the soil surface. Soil surface is very resistant to erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The thickness of the A-horizon varies significantly with soil series and ranges from 6 to 50 inches(15 to 127 cm) thick. Soil colors may be very dark gray, dark gray, gray, or grayish brown (10YR 2 to 6/0, 1 or 2 or 2.5Y 3/2 or 5Y 4/1)when dry and black, very dark gray, dark gray, very dark grayish brown (10YR 2 to 4/1 or 2 or 5Y 3/1 or N 2.5/) when moist.

   Soil structures in the A-horizon are weak fine subangular blocky parting to weak fine granular, weak medium subangular blocky parting to weak fine granular, moderate fine prismatic structure parting to moderate fine subangular blocky weak fine or weak fine and medium granular, or weak thin platy.

   See Official Soils Descriptions for additional details; major soil series correlated to the site are Calco, Arlo, Barney, Kezan, James, Loup, Zook, Baltic, Norway, Clarno, Clamo, Colo, and Lamo.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant community composition is approximately 80-95 percent grasses or grass-like plants, 5 to 10 percent forbs, and 0 to 5 percent shrubs which optimizes infiltration on the site. The grass and grass-like component is composed of grass-likes, cool-season (C3) bunchgrass, warm-season (C4), tallgrass, The functional/structural groups provide a combination of rooting depths and structure which positively influences infiltration.

    Invasion of introduced cool-season grasses such as reed canarygrass and creeping foxtail may have an adverse impact infiltration and runoff.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Typically, none. Physical impact during wet or ponded periods may cause temporary compaction, but this limited compaction will not restrict root development in the reference state.

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. Grass-likes (4 species minimum): hardstem bulrush, sedges, rushes, bulrushes, spikesedges.
    2. Native, perennial, cool-season, bunchgrass (3 species minimum): northern reedgrass, bluejoint reedgrass, plains bluegrass.

Phase 1.2
1. Native forbs (4 species minimum): water knotweed, nodding beggartick, and other forbs which vary from location to location.
2. Grass-likes (3 species minimum): rushes, sedges, bullrushes, spike-sedges.
3. Native, perennial, cool-season, bunchgrass (2 species minimum): northern reedgrass, bluejoint reedgrass, plains bluegrass.

Sub-dominant: Phase 1.1
1. Native, perennial, warm-season tallgrass (1 species minimum): big bluestem, Indiangrass, prairie cordgrass, switchgrass.
2. Native forbs (4 species minimum): broadleaf arrowhead, and other forbs which vary from location to location.

Phase 1.2
1. Native, perennial, warm-season tallgrass (1 species minimum): big bluestem, Indiangrass, prairie cordgrass, switchgrass.

Other: Minor - Phase 1.1
1. Native annual grass: rough barnyard grass, scratchgrass.
2. Shrubs: willows, indigobush, and other shrubs that vary from location to location.

Minor - Phase 1.2
1. Native annual grass: rough barnyard grass, scratchgrass.
2. Shrubs: willows, indigobush, and other shrubs that vary from location to location.

Additional: The Tapertip Flatsedge – Rough barnyardgrass – Common Rivergrass – Slough Sedge Community or Reference Community (1.1) includes six F/S groups which include in order of relative abundance, grass-likes; native, perennial, cool-season, bunchgrass; native annual grass; native, perennial, warm-season, tallgrass; native forbs; and shrubs.

The Willow - Prairie Cordgrass – Big Bluestem Community (1.2) includes six F/S groups which include in order of relative abundance, native, perennial, warm-season (C4) tallgrass; grass-likes; shrubs; native, perennial, cool-season (C3) bunchgrass; native, annual grasses; and native forbs.

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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.

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14. **Average percent litter cover (%) and depth (in):** Plant litter cover is evenly distributed throughout the site and is expected to be 80 to 90 percent and at a depth of 0.5 to 1.5 inches (1.25 to 3.75 cm). Reed canarygrass or creeping foxtail excessive litter can negatively impact the functionality of this site.

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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 4,500 pounds per acre in a year with normal precipitation and temperatures. Low and High production years should yield 3,000 and 6,000 pounds per acre respectively.

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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: No non-native invasive species are present. Canada thistle, reed canarygrass, creeping foxtail, common watercress, leafy spurge, quackgrass, redtop, and purple loosestrife are known invasives that have the potential to become dominant or co-dominant on the site. Note: species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants.

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17. **Perennial plant reproductive capability:** All perennial species exhibit high vigor relative to climatic 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.
