USDA Natural Resources
Conservation Service

Ecological site R065XY022NE
Wet Land

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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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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. Erosional pedestals or terracettes are not expected.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground typically less than 5 percent with patches less than 2 inches (5 cm) wide. 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 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), 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 from water is possible, but 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 will be 6. This site typically has an O-horizon consisting of roots and partially decomposed vegetation that is up to 3 inches (7.5 cm) thick. Surface organic matter adheres to the soil surface. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A-horizon is 2 to 19 inches (5-48.25 cm) thick. The soil color is typically dark gray (values of 3-5) when dry and black (values of 2 to 4) when moist. Soil structure is medium to fine angular blocky in the A-horizon.

   Tryon, Loup, and Almeria are the major soil series correlated to this ecological site. Other soil series that have been correlated to this site include Barney, Crowther, Cullison, Cutcomb, Gannett, Guss, and Hoffland.

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 (rhizomatous, warm-season tall- and midgrasses and tufted perennial cool season grasses) with fine and coarse roots positively influences infiltration.

    The expected composition of the plant community is 55 to 75 percent perennial grasses, 20 to 30% grass-likes, 5 to 10 percent forbs, and 1 to 5 percent shrubs. The perennial grass component is made up of warm-season tallgrass (25-50%), cool-season grasses (10-25%), and warm-season shortgrass (5-10%).

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. Compaction layers should not be present.

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, warm-season, tallgrass, 1450-2900 #/ac, 25-50%, 1 species minimum: prairie cordgrass.
    2. Grass-like, 1160-1740 #/ac, 20-30%, 1 species minimum: sedge, rush, bulrush, spikerush.
    3. Native, perennial, cool-season, tall- and midgrass, 290-2030 #/ac, 5-35%, 1 species minimum: bluejoint, northern reedgrass, slimstem reedgrass, slender wheatgrass.

    Sub-dominant: Phase 1.1
    N/A

Other: Minor - Phase 1.1

1. Native, perennial, cool-season shortgrass, 290-580, 5-10%: plains bluegrass.

2. Native forb, 290-580, 5-10%: forbs present vary from location to location.

3. Shrub, 58-290, 1-5%: dwarf false indigo, Missouri River willow, narrowleaf willow, meadow willow.

Additional: The Reference Community (1.1) includes six functional/structural groups which are in order of relative abundance native, perennial, warm-season tallgrass; grass-like; native, perennial, cool-season tall- and midgrass; native, perennial, cool-season shortgrass; native forbs; native shrubs.

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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. Bunch grasses have strong, healthy centers and shrubs have few dead stems.

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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 0.50 to 1.5 inch (1.3-4 cm).

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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 5,800 pounds per acer on an air dry weight basis. Low and high production years should yield 4,700 and 6,300 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:** Canada thistle, reed canarygrass, creeping foxtail, common watercress, leafy spurge, quackgrass, redtop, and purple loosestrife are known invasives that have the potential to be dominant or co-dominant on the site. Consult the state noxious weed and state watch lists for potential invasive species on each ecological site.

    NOTE: Invasive plants (for the purposes of the IIRH protocol) are plant species that are typically not found on the ecological site or should only be in trace or minor categories under the natural disturbance regime and have the potential to become a dominant or codominant species on the site if their establishment and growth are not actively controlled by natural disturbances or management interventions. Species listed characterize degraded states AND have the potential to become a dominant or co-dominant species.

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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.
