USDA Natural Resources
Conservation Service

Ecological site R065XY025NE
Saline Subirrigated

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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. Pedestals and terracettes are not expected on this site. Alkali sacaton tends to have a hummocky growth form that may appear pedestalled.

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.

   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.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter should fall in place. Litter movement is not expected on this site.

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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 5 to 6, normally 6. Surface organic matter adheres to the soil surface. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface layers range from a depth of 3 to 4 inches (7.6-10.2 cm) thick. Soil color from gray (values of 5 to 6) dry and dark gray, dark grayish brown, very dark grayish brown to black (values of 2 to 4) moist. Soil surface structure is typically single grain to weak fine granular in the A-horizon, however, Clawhammer soils have a moderate medium subangular blocky parting to moderate thin platy structure . These soils are slightly to strongly saline and moderately to very strongly alkaline which adversely impacts plant species composition and growth.

   Wildhorse is the major soil series correlated to this site, Clawhammer, Janise, and Selia are also correlated to this site.

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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. Woody encroachment may adversely impact infiltration on this site.

    The expected composition of the plant community is 80 to 90 percent grasses, 5 to 15 percent grass-likes, and 0 to 5 percent forbs. The perennial grass component is made up of warm-season tallgrass (5-25%), warm-season midgrass (20-40%), warm-season shortgrass (10-20%), and cool-season grass (10-20%).

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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.

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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 midgrass, 580-1160 #/ac, 20-40% (1 species minimum: alkali sacaton, little bluestem, sand dropseed.
    2. Native, perennial, warm-season tallgrass, 145-725 #/ac, 5-25% (1 species minimum): alkali cordgrass, switchgrass.

    Phase 1.2
    1. Native, perennial, warm-season shortgrass, 510-680 #/ac, 30-40% (1 species minimum): blue grama, saltgrass, scratchgrass.
    2. Native, perennial, warm-season midgrass, 340-680 #/ac, 20-40% (1 species minimum): alkali sacaton, little bluestem,

sand dropseed.

Phase 1.3
1. Native, perennial, cool-season grass, 475-855 #/ac, 25-45% (2 species minimum): foxtail barley, plains bluegrass, slender wheatgrass, western wheatgrass.
2. Native, perennial, warm-season midgrass, 380-760 #/ac, 20-40% (2 species minimum: alkali sacaton, little bluestem, sand dropseed.
3. Native, perennial, warm-season shortgrass, 285-570 #/ac, 15-30% (1 species minimum): blue grama, saltgrass, scratchgrass.

Sub-dominant: Phase 1.1
1. Native, perennial, warm-season shortgrass, 290-580 #/ac, 10-20% (1 species minimum): blue grama, saltgrass, scratchgrass.
2. Native, cool-season grass, 145-435 #/ac, 5-15% (1 species minimum): foxtail barley, plains bluegrass, slender wheatgrass.
3. Native grass-likes, 145-435 #/ac, 5-15% (1 species minimum): sedges, spikerushes, rush, bulrush.

Phase 1.2
1. Native, cool-season grass, 85-255 #/ac, 5-15% (1 species minimum): foxtail barley, plains bluegrass, slender wheatgrass.
2. Native grass-likes, 85-255 #/ac, 5-15% (1 species minimum): sedges, spikerushes, rush, bulrush.

Phase 1.3
1. Native grass-likes, 190-285 #/ac, 10-15 (1 species minimum): sedges, spikerushes, rush, bulrush.
2. Native, perennial, warm-season tallgrass, 95-285 #/ac, 5-15% (1 species minimum): alkali cordgrass, switchgrass.

Other: Minor - Phase 1.1
1. Native forb, 0-145 #/ac, 0-5%: forbs present vary from location to location.

Minor - Phase 1.2
1. Native, perennial, warm-season tallgrass, 0-85 #ac, 0-5%: switchgrass, alkali cordgrass.
2. Native forb, 0-145 #/ac, 0-5%: forbs present vary from location to location.

Minor - Phase 1.3
1. Native forbs, 0-95 #/ac, 0-5%: forbs present vary from location to location.

Trace - Phase 1.2
1. Non-native, cool-season grass, 0-38 #/ac, 0-2%.

Trace - Phase 1.3
1.Non-native C3 grass, 0-38, 0-2%: Kentucky bluegrass

Additional: The Reference Community (1.1) includes six F/S groups. These groups are, in order of relative abundance, native, perennial, warm-season midgrass; native, perennial, warm-season tallgrass; native, perennial, warm-season shortgrass=native, perennial, cool-season grass; grass-likes; native forb.

The At-Risk Community (1.2) includes seven F/S groups which are in order of relative abundance native, perennial, warm-season shortgrass, native, perennial, warm-season midgrass, grass-likes=native, perennial, cool-season grass; native, perennial warm-season tallgrass=native forb; non-native, cool-season grass..

The Excessive Litter Community (1.3) includes seven F/S groups which are native, perennial, cool-season grass; native, perennial, warm-season midgrass; native, perennial, warm-season shortgrass; grass-like; native, perennial warm-season tallgrass; native forb; and non-native cool-season grass.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Bunch grasses 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 60 to 80 percent and at a depth of approximately 0.25 to 0.5 inch (0.64-1.27 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 2,900 pounds per acre on an air dry weight basis. Low and high production years should yield 2,100 and 3,500 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, Russian olive, and eastern redcedar 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.

    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.

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.