USDA Natural Resources
Conservation Service

Ecological site R071XY054NE
Sandy

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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/or 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 10 percent or less. Bare ground patches should be less than 2 inches (5.1cm) and scattered across 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 depositional areas are not expected on this site.

7. **Amount of litter movement (describe size and distance expected to travel):** None. 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. Interspaces are quite small and there should be no difference between interspaces and under canopy. High root content and organic matter will be present in the soil surface.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A horizon is 5 to 14 inches (12 to 36 cm) thick. Soils are predominantly loamy fine sand and fine sandy loam. Color of A-horizon is dark grayish brown (10YR 4/2) dry and very dark gray (10YR/3/1) moist for loamy fine sand soils to grayish brown (10YR 5/2) dry, and very dark grayish brown (10YR 3/2) moist with fine sandy loams. Structure ranges from weak coarse blocky, weak coarse subangular blocky to weak medium granular.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant community composition of 70 to 90 percent perennial grasses and grass-likes, 5 to 10 percent forbs, and 5 to 10 percent shrubs will optimize infiltration on the site. The grass and grass-like component is made up of native, perennial, warm-season, tall, rhizomatous grasses (35-50%), native, perennial, warm-season, mid-grasses (20-30%), native, perennial, cool-season grasses (5-10%), native, perennial, warm-season, short grasses (5-10%), and grass-likes (0-2%).

    Infiltration can be adversely impacted by the invasion of Kentucky bluegrass, smooth brome, tall fescue, and trees when present above 10 percent (subdominant designation).

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. No compaction layers occur naturally on this site.

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, 945-1350#/ac, 35-50% (4 species minimum): sand bluestem, Indiangrass, switchgrass, prairie sandreed.

    Phase 1.2
    1. Native, perennial, warm-season, tallgrass, 875-1250#/ac, 35-50% (3 species minimum): sand bluestem, Indiangrass, switchgrass, big bluestem.

    Phase 1.3
    1. Native, Warm-season, Shortgrass, 425-595, 25-35% (2 species minimum): blue grama, hairy grama, thin paspalum, purple lovegrass.

    Sub-dominant: Phase 1.1
    1. Native, perennial, warm-season midgrass, 540-810 #/ac, 20-30% (2 species minimum): little bluestem, sand dropseed, sand lovegrass.

Phase 1.2
1. Native, perennial, warm-season midgrass, 500-750 #/ac, 20-30% (1 species minimum): little bluestem, sand dropseed.

2. Native, cool-season, bunchgrass, 250-375 #/ac, 10-15% (3 species minimum): needle and thread, porcupinegrass, prairie Junegrass, Scribner's rosette grass

Phase 1.3
1. Native, Cool-Season, Rhizomatous Grass, 170-340 #/ac, 10-20% (1 species minimum): western wheatgrass.

2. Native, warm-season, tallgrass, 85-340 #/ac, 5-a 20%, (2 species minimum) - big bluestem, sand bluestem, prairie sandreed, switchgrass.

3. Cool-season, bunchgrass, 85-340, 5-20%, (3 species minimum) - needle and thread, porcupinegrass, prairie Junegrass, Scribner's rosette grass.

4. Non-native grasses, 85-340 #/ac, 0-20%, (0 species minimum): smooth brome, Kentucky bluegrass, cheatgrass.

5. Native, warm-season, midgrass, 170-255 #/ac, 10-15%, (2 species minimum): little bluestem, sand dropseed.

6. Forbs, 85-255 #/ac, 5-15% (0 species minimum): forbs present vary from location to location.

Other: Minor - Phase 1.1
1. Native, perennial, warm-season, shortgrasses, 135-270 #/ac, 5-10%: blue grama, hairy grama, sandhill muhly.

2. Native forbs (perennial and annual), 135-270 #/ac, 5-10%: species vary from location to location.

3. Native, perennial, cool-season grass, 27-270 #/ac, 1-10%: western wheatgrass, needle and thread, porcupinegrass, prairie Junegrass, Scribner's rosette grass.

4. Shrubs, 27-135 #/ac, 1-5%: leadplant, prickly pear, western sandcherry, rose.

Minor - Phase 1.2
1. Native forbs (perennial and annual), 125-250 #/ac, 5-10%: species vary from location to location.

2. Native, warm-season, shortgrass, 25-250 #/ac, 1-10%: blue grama, thin paspalum, purple lovegrass;

3. Native, cool-season, rhizomatous grass, 25-250 #/ac, 1-10%: western wheatgrass.

4. Shrubs, 25-250 #/ac, 1-10%: leadplant, western sandcherry, other shrubs.

5. Grass-likes, 25-125 #/ac, 1-5%: sedges.

6. Non-native Grasses, 0-125 #/ac, 0-5%: smooth brome, Kentucky bluegrass, cheatgrass.

Minor - Phase 1.3
1. Grass-likes, 85-170 #/5-10%: sedges.

2. Shrubs, 17-85 #/ac, 1-5%: western sandcherry, rose, other shrubs.

Trace - Phase 1.1

1. Grass-likes, 0-54 #/ac, 0-2%: sedges, other grass-likes.

Additional: The Reference Community (1.1) includes seven F/S Groups. These groups in order of expected abundance are native, perennial, warm-season tallgrass; native, perennial, warm-season midgrass; native, perennial, warm-season short grass; native forb (perennial and annual); native, perennial, cool-season grass; shrub; and grass-likes.

The Degraded Native Grass Community includes nine F/S groups. These groups in order of expected abundance are native, perennial, warm-season tallgrass; native, perennial, warm-season midgrass; native, perennial, cool-season bunchgrass; native forb; native, perennial, warm-season short grass; native, perennial, cool-season, rhizomatous grass; shrub; grass-likes; and non-native grass.

The At-Risk Native Grass Community (1.3) also includes nine groups.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** A few (less than 3%) dead centers may occur in bunchgrasses. Shrubs may show some dead branches 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 80-90% and a depth of 0.25 inches. Kentucky bluegrass 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):** Low: 2,200 lbs/ac, Normal: 2,700 lbs/ac, High 3,200 lbs/ac
Annual-production is 2,700 pounds per acre in a year with normal precipitation and temperatures. Low and High production years should yield 2,200 and 3,200 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:** Kentucky bluegrass, smooth brome, silver bluestem, Caucasian bluestem, tall fescue, eastern redcedar, honey locust, musk thistle, common mullein, Sericea lespedeza, and others as they become known.

See Nebraska Invasive Species website: https://neinvasives.com/plants.

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17. **Perennial plant reproductive capability:** AAll 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.
