

Ecological site GX064X01X036 Loamy 17-20" PZ

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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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Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills: None. Rills should not be present.
- 2. **Presence of water flow patterns:** Typically, none. Water flow patterns may be present on slopes of 10% or greater. When present, they will be no longer than 2 to 4 inches (5.1 to 10.2 cm), less than 3 inches (7.6 cm) wide, and discontinuous. Water flow patterns, when present, are often associated with animal activity.
- 3. Number and height of erosional pedestals or terracettes: None. Pedestals or terracettes should not be present.
- 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 to 10 percent or less, and bare ground patches are less than 2 inches (5.1 cm) in diameter.
- 5. Number of gullies and erosion associated with gullies: None. Gullies should not be present

should not be present.

- 7. Amount of litter movement (describe size and distance expected to travel): Litter should fall in place. Slight amount of movement (less than 6 inches or 15 cm) 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 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.
- 9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): A-horizon should be 4 to 15 inches (10.2 to 38.1 cm) thick. Colors range from gray, brown, grayish brown to dark grayish brown (values of 4 or 5) when dry and dark brown, very dark grayish brown to very dark gray (values of 3) when moist. Structure typically is medium to fine granular at least in the upper A-horizon.
- 10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Combination of shallow and deep rooted species (mid and tall rhizomatous and tufted perennial cool season grasses) with fine and coarse roots positively influences infiltration. Invasion of introduced cool-season grasses such as Kentucky bluegrass and crested wheatgrass may have an adverse impact infiltration and runoff.

Relative composition is approximately 80 percent grasses or grass-like plants, 15 percent forbs, and 5 percent shrubs. The grass component is composed of C3, rhizomatous grasses (20-30%), C3, bunch grasses (15-25%), C4, tall- and midgrasses (5-20%), C4, shortgrasses (5-10%), grass-likes (2-7%).

- 11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None. When dry, B horizons can be hard and appear to be compacted, but no platy structure will 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, C3, rhizomatous, grass, 480-720 #/ac, 20-30% (1 species minimum): western wheatgrass.

2. Native, perennial, C3, bunchgrass, 360-600 #/ac, 15-25% (1 species minimum): green needlegrass, needle and thread, prairie Junegrass, Scribner's rosette grass.

Phase 1.2

1. Native, perennial, C4 shortgrass, 320-640 #/ac, 20-40%, (2 species minimum): buffalograss, blue grama, threeawn.

Sub-dominant: Phase 1.1

1. Native, perennial, C4, tall- and midgrass, 120-480 #/ac, 5-20% (1 species minimum): sideoats grama, big bluestem, little bluestem, dropseed, plains muhly.

2. Native forbs, 120-360 #/ac, 5-15% (5 species minimum): vetch, Cuman ragweed, white sagebrush, goldenrod,

scurfpea other species that vary from location to location.

Phase 1.2

1. Native, perennial, C3, rhizomatous grass, 80-320 #/ac, 5-20%, (1 species minimum): western wheatgrass.

2. Native forbs, 80-240 #/ac, 5-15% (12 species minimum): Cuman ragweed, verbena, vetch, scurfpea, goatsbeard,

prairie sagewort, field sagewort, white sagebrush, curlycup gumweed, deathcamas, scarlet globemallow, pussytoes, and other forbs that vary from location to location.

Other: Minor - Phase 1.1

1. Native, perennial, C4, shortgrass, 120-240 #/ac, 5-10%: blue grama, buffalograss.

2. Grass-likes, 48-240 #/ac, 2-10%: threadleaf sedge, other grass-likes.

3. Shrubs, 24-120 #/ac, 1-5%: snowberry, leadplant, rose, broom snakeweed, pricklypear.

Minor - Phase 1.2

1. Grass-likes, 80-160 #/ac, 5-10%: threadleaf sedge, other grass-likes.

2. Native, perennial, C3 bunchgrass, 32-160 #/ac, 2-10%: needle and thread, green needlegrass, prairie Junegrass, Scribner's rosette grass.

3. Native, perennial, C4 tall- and midgrass, 16-160 #/ac, 1-10%: sideoats grama, big bluestem, little bluestem, dropseed, plains muhly.

4. Non-native grass, 0-160 #/ac, 0-10%: cheatgrass, field brome, crested wheatgrass, Kentucky bluegrass, smooth brome.

5. Shrub, 16-80 #/ac, 1-5%: shrubs present vary from location to location.

Trace - Phase 1.1

1. Native trees, 0-24 #/ac, 0-1%: ponderosa pine, Rocky Mountain juniper.

Trace - Phase 1.2

1. Native, coniferous tree, 0-16 #/ac, 0-1%: Rocky Mountain juniper, ponderosa pine.

Additional: The Rhizomatous Wheatgrass-Needle and Thread Community or Reference Community (1.1) consists of eight F/S groups. These groups, in order of relative abundance are native, perennial, C3, rhizomatous grass: native, perennial, C3, bunchgrass; native, perennial, C4 tall- and midgrass; native forbs; native, perennial, C4 shortgrass; grass-likes; shrubs; and native, coniferous trees.

The Blue Grama-Buffalograss-Western Wheatgrass Community (1.2) includes nine F/S groups. These groups, in order of relative abundance are native, perennial, C4 shortgrass; native, perennial, C3 rhizomatous grass; native forbs; grass-likes; native, perennial, C3 bunchgrass; native, perennial, C4 tall- and midgrass; non-native grass; shrub; and native, coniferous tree.

- 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 50 to 70 percent and at a depth of 0.25 inch (0.65 cm). Kentucky bluegrass excessive litter can negatively impact the functionality of this site.

production): Annual production is 2,400 pounds per acre in a year with normal precipitation and temperatures. Low and High production years should yield 1,500 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. Annual bromes, Kentucky bluegrass, smooth brome, crested wheatgrass, sweet clover, and eastern red cedar 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.