

## **Ecological site R073XY114KS Loess Hills**

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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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| Author(s)/participant(s)                       | Chris Tecklenburg Revision 3-16-2017<br>from MLRA 72 Loess Breaks David Kraft, John Henry, Doug<br>Spencer and Dwayne Rice Original Authors 2-2005 |
| Contact for lead author                        | Chris Tecklenburg (chris.tecklenburg@ks.usda.gov)  |
| Date   | 10/02/2019   |
| Approved by                                    | David Kraft  |
| Approval date                                  |  |
| Composition (Indicators<br>10 and 12) based on | Annual Production  |

### **Indicators**

1. **Number and extent of rills:** Slight evidence of rills may exist on steeper slopes.
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2. **Presence of water flow patterns:** Typically none, if present (steeper slopes following intense storms) Short and not connected.
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3. **Number and height of erosional pedestals or terracettes:** None to slight, in or near water

flow paths.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-10% bare ground, with bare patches generally less than 6-8 inches in diameter. Extended drought can cause bare ground to increase upwards to 10-20% with bare patches reaching upwards to 8-12 inches in diameter. Cross-sectional viewing of this site appears to have more bare ground than vertical viewing due to exposed loess-steps.

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5. **Number of gullies and erosion associated with gullies:** There are few, if any, gullies and there is no active headcutting and sides are covered with vegetation.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Slight wind scouring is possible on areas of exposed loess.

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7. **Amount of litter movement (describe size and distance expected to travel):** Movement of 1-3 feet is possible following intense rain storms.

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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):** Stability class rating anticipated to be 3-5 in interspaces at soil surface.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Average SOM is 0.5-1%. Soils are very deep. Surface texture is silt loam. The A-horizon is 0-4 inches in depth. Soil color is dark grayish brown (10YR 4/2) moist, weak fine platy structure to a depth of 2 inches, weak fine granular structure below 2 inches; strong effervescence.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Diverse grass, forb, shrub canopy, and root structure reduces raindrop impact and slows overland flow, providing

increased time for infiltration to occur. Extended drought reduces short-, mid-, and bunchgrasses causing decreased infiltration and increased runoff following intense storms. However, exposed loess has more of an effect on infiltration and runoff than the composition of the plant community on steeper slopes.

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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
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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: Warm-season midgrass dominant 57%. Little bluestem 600-1100, sideoats grama 100-220, plains muhly 0-110, Fendler threeawn 0-40

Sub-dominant: Warm-season tallgrass subdominant 16%. Big bluestem 80-330, switchgrass 0-110, composite dropseed 5-40, sand dropseed 5-40

Other: Warm-season shortgrasses minor 10%. Blue grama 100-220, buffalograss 0-110, hairy grama 0-110.

Cool-season grasses minor 10%. Needle and thread 20-110, green needlegrass 20-220, western wheatgrass 50-220

Additional: Forbs minor component 5%

Shrubs and cacti trace 2%

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Typically minimal. Expect slight mortality/decadence during and following drought, fire and/or long-term lack of disturbance.
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14. **Average percent litter cover (%) and depth ( in):** 35-45% litter cover at 0.25 inch depth. Litter cover during and following extended drought ranges from 15-30%.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1000 lbs./ac. low precip years, 3000 lbs./ac. average

precip years, 2200 lbs./ac. above average precip years. After extended drought or the first growing season following wildfire, production may be significantly reduced by 450 – 750 lbs./ac. or more.

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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: Invasive plants should not occur in the Reference Plant Community. However, cheatgrass, Russian thistle, kochia, other non-native annuals will invade following extended drought assuming a seed source is available. Blue grama, little bluestem, hairy grama, sand dropseed, red threeawn, threadleaf sedge, milkvetches, and small soapweed are the major native (non-invasive) increasers on this site.
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17. **Perennial plant reproductive capability:** The number and distribution of tillers or rhizomes is assessed on perennial plants occupying the evaluation area. No reduction in vigor or capability to produce seed or vegetative tillers given the constraints of climate and herbivory.
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