USDA Natural Resources
Conservation Service

Ecological site R052XN172MT
Dense Clay (DC) 10-14" p.z.

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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.

Author(s)/participant(s)	Siddoway/Bandy
Contact for lead author	Great Falls Area Office, Great Falls, MT Reference site used? No
Date	04/19/2005
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Slopes are between 0 – 12% and bare ground will be 40-50%, so past and current rill activity is expected on this site after rain storms or following melting of adequate snow depths within a short time period.

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2. **Presence of water flow patterns:** Because the soil surface is not well covered and slopes greater than zero are common on this site there will be evidence of water flow patterns. Sodium content in these soils restricts water intake into the soil.

3. **Number and height of erosional pedestals or terracettes:** Where there is adequate slope and unsheltered distance, pedestals and terracettes will be shallower towards the top of the slope and deeper towards the bottom of the slope.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground will be 40 – 50% across this site.

5. **Number of gullies and erosion associated with gullies:** Past gully erosion may be evident on this site. Active gullies should not be present.

6. **Extent of wind scoured, blowouts and/or depositional areas:** These areas will be rare on this site.

7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement may move over extensive distances relative to other sites due to the presence of larger areas of bare ground. Size of the litter would reflect the more common plant tissue (leaves & reproductive culms) in the reference state – mainly western wheatgrass and green needlegrass.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values of 3 or 4 under plant canopies; areas of bare soil on this site will have values between 1 and 3.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is platy; A horizon depth is less than 1”.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Even with the dominance of taller, deeper-rooted bunchgrasses infiltration on this site is restricted due to the presence of sodium in the soil, and runoff will be more common on this site with more moderate storm

events.

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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):** Will not be present generally, but there may be areas that have “healed” from former bison trails and wallows as well as from more current livestock trailing, which will have a compaction layer below the soil surface. The A or E horizon will have vesicular crusting which inhibits germination.

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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:

    Sub-dominant:

    Other:

    Additional: Cool season, rhizomatous grasses (Western wheatgrass,) > cool season, taller bunchgrasses (Green needlegrass) >> cool season short grasses (Prairie junegrass) > shrubs > perennial forbs = warm season shortgrass (Blue grama).

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Will be low for all functional groups in a given year. Prolonged droughts which last more than 3 years may show increases in mortality and decadence for all plant groups.

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 600 - 1100 #/acre. This would be the expected production for the reference state during adequate moisture years. 900 pounds would be the expected production in a 12 inch precipitation zone.

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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:** Blue grama, Japanese brome, a variety of annual or biennial weedy forbs, fringed sagewort, broom snakeweed, prickly pear cactus, cheatgrass.

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17. **Perennial plant reproductive capability:** Due to the soil restrictions on this site, seed production can be unpredictable. Bunchgrasses will generally produce seeds in good moisture years, however the cool season rhizomatous grasses may not necessarily produce seed even with adequate moisture.
