USDA Natural Resources
Conservation Service

Ecological site DX035X04B335
Sandstone/Shale Hills 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.

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Date	03/15/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Somewhat common, due to steep slopes. Rills up to 20 feet long. On slopes with significant amounts of coarse fragments will have few rills.

2. **Presence of water flow patterns:** Somewhat common throughout site. Flow patterns may be long and sinuous and connected on steep slopes. On sites with significant amounts of coarse fragments will have less evident water flow patterns.

3. **Number and height of erosional pedestals or terracettes:** Some long-lived plants may show some slight pedestals of less than a ½” on slopes. Terracettes are common.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Expected bare ground range 20-35 percent depending on surface rock fragments. Soil can be covered with up to 60 percent of rock fragments, mostly comprised of channers and gravels.

5. **Number of gullies and erosion associated with gullies:** None to very few. When site is well vegetated and covered with rock fragments, gullies are stable and will only show minor signs of active erosion. Gullies should be shallow due to depth to bedrock and/or armored with larger rock fragments (flagstones and boulders).

6. **Extent of wind scoured, blowouts and/or depositional areas:** Deposition and blowouts by wind are not expected.

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7. **Amount of litter movement (describe size and distance expected to travel):** Due to steepness of the site, litter redistribution by water is common and expected in water flow patterns.

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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):** The expected average soil stability is 3. Surface rock fragments, litter, and vegetation cover aid in reducing erosion. Surface textures are very channery clay loam, very gravelly clay loam, clay loam and clay.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface horizon is 2 to 4 inches deep. Structure is mostly moderately medium platy parting to moderate or strong fine granular structure. Surface color mostly pale brown (10YR 6/3) to light yellowish brown (10YR 6/4).

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Due to steepness and moderate amounts of rock fragments of this site, vegetation only has minimum effect on infiltration and runoff. This site is characterized by a slight dominance of grasses over shrubs with a light canopy of scattered trees. When well vegetated the cover lends to slowing runoff and allowing for some infiltration.

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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 perennial grasses > Half shrubs

    Sub-dominant: Cool season perennial grasses >= Large shrubs > Trees = Forbs

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All plant functional groups are adapted to survival in all but the most severe droughts. Severe winter droughts affect the shrubs the most. Severe summer droughts affect grasses the most.

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14. **Average percent litter cover (%) and depth (in):** Litter depth can vary due to weather and cover type dominance

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** The expected annual total production in an average year is 400 – 500 lbs/ac.

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:** Shadscale, broom snakeweed and annual forbs are native to the site but may have the potential to increase with continued disturbance. Cheatgrass, annual wheatgrass, and Russian thistle are non-native annuals that have the potential to invade the site with or without disturbance.

17. **Perennial plant reproductive capability:** All plants native to the site are adapted to the climate and are capable of producing seeds, stolons, and/or rhizomes during the most severe droughts.