USDA Natural Resources
Conservation Service

Ecological site R035XC328AZ
Cobbly Slopes 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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Approved by	Byron Lambeth
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills formation is slight and infrequent across the site. Most rills are mostly found on exposed areas on steep slopes. Moderate permeability and abundance of surface rock fragments would mask rill formation.

2. **Presence of water flow patterns:** Water flow patterns are scattered on this site and plant distribution and exposed rock cover will depict where they will be present.

3. **Number and height of erosional pedestals or terracettes:** There will be some slight pedalstalling or terracettes in association with water flow patterns. Slight mounding will occur around the bases of long lived perennial plants and should not be considered pedestals.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground varies from 15-30%.

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

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7. **Amount of litter movement (describe size and distance expected to travel):** Most herbaceous and fine woody litter will remain in place, but fine litter (<1/4" diameter)will be transported by wind and water movement in flow paths and rills. Coarse woody litter and duff will accumulate under shrub and tree canopies.

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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 soil surface is protected by a wide range of rock fragments (15% to 60%) and by an average litter amount of 10%. Soil stability will be 1.5 to 3.0 in open areas and 3.0 to 5.0 under plant canopies.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The A horizon varies in depth from 2" to 6" and is generally gravelly soils with pebbles, gravels, cobbles and stones. Textures are mostly gravelly fine sandy loam and very cobbly fine sandy loam, with a weak medium platy structure parting to a moderate fine granular consistancy. Please note, that the soil survey for the area you are at should be referenced to get more specific information about the soil you are assessing.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This is a scattered plant community that is predominated by grasses (75%-85%) with a mixture of shrubs (5%-10%) and minor amounts of trees and forbs (up to 5% for each). This in combination with the rock fragments in the soil profile help promote infiltration and reduce runoff. The average distance the nearest perennial plant (fetch) ranges from 13-16".

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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 expected on this site due to loamy textures and high rock fragment content.

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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: Cool season grasses > warm season grasses

    Sub-dominant: Large shrubs > half-shrubs

    Other: Forbs > Trees > succulents

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** In average years plant mortality is expected to be low (1 to 5%) in grasses and shrubs. During and after drought years there can be from 5 to 20% die off of shrubs, grasses and trees. Severe winter droughts affect shrubs, trees and cool season grasses the most. Severe summer droughts affect the warm season grasses the most.

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14. **Average percent litter cover (%) and depth (in):** Most litter will accumulate below plant canopies or near plant bases.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Average annual production on this site is expected to be 450-550 lbs./ac. in a year of average annual precipitation.

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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:** Species that can invade are cheatgrass, broom snakweed, Russian thistle, Utah juniper and can increase with time.

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