USDA Natural Resources
Conservation Service

Ecological site R035XB236AZ
Colluvial Slopes 6-10" p.z. Warm

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

Indicators

1. **Number and extent of rills:** Few and not likely due to the extensive surface cover of rock fragment armor and the large amount of rock fragments in the profile.

2. **Presence of water flow patterns:** Few water flow patterns expected and may not be apparent due to significant rock fragment on the surface. Should be short to moderate in length and discontinuous.

3. **Number and height of erosional pedestals or terracettes:** A few might be found on the steepest slopes. Most pedestals and terracettes are associated with litter and debris and not erosion. This site is armored by a high amount of rock cover.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 10-30 percent.

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

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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):** Some fine litter will be transported in water flow pathways, but most coarse and woody litter will remain under or near shrub canopies due to high rock cover.

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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):** Expect ratings of 1-2 in interspaces, 3-4 under shrub canopies.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure typically is platy (weak to moderate, thin to thick) or granular (moderate, fine to coarse). Soil surface textures range from loamy fine sand to fine sandy loam. All surface horizons are very gravelly to extremely gravelly with some cobbles and stones. Soil will have significant rock cover, up to 70 percent cover (gravels, cobbles, stones, and boulders). When well vegetated with rock cover, these soils have moderate resistance to water erosion and a high resistance to wind erosion. Soil color are typically reddish brown, but can vary depending on parent material.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This site is characterized by a low shrub canopy with scattered grasses and few forbs. The canopy cover ranges from 15-30

percent (70-80% shrubs, 20-30% grasses, and 1-5% forbs). The high amount of rock cover along with shrub and herbaceous plant cover aid in reducing splash erosion and rain drop impact. The rock cover helps to reduce or slow runoff and promote infiltration. This site is only slightly effective at capturing and storing moisture.

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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. These soils are not easily compacted due to the extensive cover of rock fragments and high volume of rock fragments in the surface horizons.

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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: Shrubs (blackbrush, shadscale, Bigelow sagebrush) >>

    Sub-dominant: Cool season grasses > Warm season grasses >

    Other: Perennial forbs > Annual forbs >= Succulents > Annual grasses

    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 survive in all years except for the most severe droughts. Severe winter droughts affect the shrubs the most. Severe summer droughts affect the grasses the most.

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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):** Average annual production on this site is expected to be 250 to 350 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:** Blackbrush is native to the site, but has the potential to increase and dominate the site. Cheatgrass, red brome and Russian thistle are non-native annuals that can invade on the site regardless of disturbance or management.

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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 in most years except for the most severe droughts.
