

## **Ecological site R035XY242UT Semidesert Gravelly Loam (Shadscale)**

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

### Indicators

1. **Number and extent of rills:** Few and occur throughout site. Rills may be 6 to 10 feet in length. Sides of rills may be up to 2 inches high. Rills are most likely to form below adjacent exposed bedrock or water flow patterns where sufficient water accumulates to cause erosion.

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2. **Presence of water flow patterns:** Frequent and occur throughout area. Flow patterns are sinuous and wind between the surface rocks and plant bases.

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3. **Number and height of erosional pedestals or terracettes:** Plants may show very minor pedestalling on their down slope side. Terracettes should be few and stable.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10 – 50%. (Soil surface is typically covered by up to 40% rock). Ground cover is measured as first raindrop impact, bare ground is the inverse of cover. Ground cover + bare ground = 100%. Well developed biological crusts should not be recorded as bare ground. Poorly developed biological soil crusts that are interpreted as functioning as bare ground (therefore they would be susceptible to raindrop splash erosion) should be recorded as bare ground.

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5. **Number of gullies and erosion associated with gullies:** Gullies may be present. Length often extends from exposed

bedrock until gully reaches a stream or an area where water and sediment accumulate, but they may be wide and shallow and armored with very large rocks.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence of wind generated soil movement. Wind caused blowouts and deposition are not present.

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7. **Amount of litter movement (describe size and distance expected to travel):** Some down slope redistribution caused by water. Some litter removal may occur in flow patterns and rills with deposition occurring at points of obstruction, especially following major storm events. Litter movement will increase with slope.

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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):** This site should have a soil stability rating of 4 or 5 under the plant canopies, and a rating of 3 to 4 in the interspaces. The average should be a 4. Surface texture is gravelly loam. Vegetation, litter, biological soil crusts and surface rock reduce erosion.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface is 3 inches deep. Structure is weak thick platy parting to weak fine subangular blocky. Color is strong brown (7.5YR5/6). The A horizon would be expected to be more strongly developed under plant canopies. It is important if you are sampling to observe the A horizon under plant canopies as well as the interspaces. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Distribution of vascular plants are expected to intercept raindrops reducing splash erosion. Vegetation distribution helps create sinuous water flow patterns along with any surface rock to reduce or eliminate runoff and erosion in all but the most extreme storm events. Plants have even distribution across the site. Spatial distribution of well developed biological soil crusts intercept raindrops reducing splash erosion and provide areas of surface detention to store water allowing additional time for infiltration. When perennial grasses and shrubs decrease, reducing ground cover and increasing bare ground, runoff is expected to increase and any associated infiltration reduced.

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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. There may be layers of calcium carbonate or other naturally occurring hard layers found in the soil subsurface. These should not be considered to be compaction layers.

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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 bunchgrasses > non-sprouting shrubs > = Cool season perennial bunchgrasses

Sub-dominant: sprouting shrubs > native perennial and annual forbs

Other: Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state (e.g. Crested wheatgrass and Russian wildrye etc.)

Additional: Biological soil crust is variable in its expression where present on this site and is measured as a component of ground cover.

Following a recent disturbance such as fire or drought that removes the woody vegetation, forbs and perennial grasses (herbaceous species) may dominate the community. These conditions would reflect a functional community phase within the reference state.

Dominants: Shadscale, galleta. Sub-Dominants: Indian ricegrass, Mormontea, Bigelow sagebrush. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
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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):** 205-475 lbs/ac
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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:** Rusty lupine, Locoweed, Broom snakeweed, Cheatgrass, common sunflower, pinyon pine, and Utah juniper are most likely to invade this site.
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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in all years, except in drought years.
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