

## Ecological site R028AY106UT Desert Alkali Clay Loam (Alkali Sacaton)

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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:** Very minor rill development will be evident in reference communities on this site. Development will be more pronounced following significant storm or snow melt events. The presence of rills may also be more apparent where run-on from adjacent upland sites or exposed bedrock concentrate flows. Rill development will be moderately short (< 8') and widely spaced (8' – 10'). Evidence of rills will decrease in the months following major weather events.
- 2. Presence of water flow patterns:** Evidence of stable overland water flow is apparent in the reference community; increased flow activity may be observed immediately following significant weather events. Flow patterns are normally <15 feet long, follow natural contours, and are typically spaced 8 to 10 feet apart.
- 3. Number and height of erosional pedestals or terracettes:** Very slight evidence of pedestals or terracettes caused by accelerated water erosion may be evident in the reference community. 1 – 2 inches of elevational mounding around perennial grass clumps and within biological soil crusts is normal and may not be water erosion caused. Some pedestalling around Indian ricegrass plants may indicate past water erosion. There should be no exposed roots.
- 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% - 20% in the reference community. Ground cover (the inverse of bare ground) typically includes: coarse fragments – 1% to 3%; plant canopy – 35% to 50%; litter – 20% to 30%, and biological soil crusts – 2% to 5%.

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5. **Number of gullies and erosion associated with gullies:** Some gully channels are a normal component of desert environments. Gullies associated with reference areas will typically have stable, partially vegetated sides and bottoms with no evidence of head-cutting. Some evidence of disturbance may be evident following significant weather events or when gullies convey runoff from higher elevation rocky or naturally runoff producing areas.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence of wind generated soil movement is present in reference communities. Slight depositional mounding within perennial grass plants, Shadscale canopies and biological soil crusts is a normal characteristic of this site.
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7. **Amount of litter movement (describe size and distance expected to travel):** Most litter resides in place within or under plant canopies. Some movement of the finest material (< 1/8" or less) may move (1' – 2') in the direction of prevailing winds or down slope if being transported by water. Little accumulation is observed behind obstructions.
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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 to 5. Surface textures are typically silty clay loams containing few coarse fragments.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface is 4 inches deep and structure is moderate, coarse subangular blocky. The A-horizon color is 2.5YR 7/2. Soils have a salic (natric) horizon that extends 40 inches into the soil profile. Where surface soil is lost, increased clay and silt percentages are common in the remaining soil material.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The presence of perennial grasses combined with Shadscale in the reference community provides for the best infiltration and least runoff from storm events and snow melt. As perennial vegetation decreases and bare ground increases, runoff increases and soil loss is accelerated. Biological soil crusts provide for added soil stability when present.
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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. Soils are deep to very deep. Increases in clay or silt content in subsoil layers could be mistaken for compaction.
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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: Dominant: Warm season grasses (e.g. Alkali sacaton and/or James galleta) 60 – 80%, >> Non-sprouting shrubs (e.g. Shadscale and Bud sagebrush) 10 – 20%.
- Sub-dominant: Sub-dominant: Cool season grasses (e.g. Indian ricegrass and Bottlebrush squirreltail) 5-10% > sprouting shrubs (e.g. Black Greasewood and Winterfat).
- Other: Others: Shrubs (e.g. Low rabbitbrush and Greenmolly) 1-3%, perennial forbs (e.g. Scarlet globemallow and

Slender seepweed) 1 - 3%

Additional: Moss and lichen communities will normally be found under plant canopies while the cyanobacteria may be found throughout the site.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** During years with average to above-average precipitation, there should be very little recent mortality or decadence apparent in either the shrubs or grasses. During severe (multi-year) drought or insect infestations up to 80% of the Shadscale plants may die. Some mortality of bunchgrass and other shrubs may also occur during severe droughts. There may be partial mortality of individual bunchgrasses and other shrubs during less severe drought. During drought years principle shrubs may experience early and prolonged leaf drop.

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14. **Average percent litter cover (%) and depth ( in):** Litter cover ranges from 10 to 20%. Depth varies from  $\frac{3}{4}$  -  $\frac{1}{2}$  inch with depth increasing near plant canopies.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 350 – 450 pounds on an average year.

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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:** Broom snakeweed, Russian thistle, Redstem storksbill, annual bromes and Halogeton are likely to increase in or invade this site.

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17. **Perennial plant reproductive capability:** All perennial plant species have the ability to reproduce in most years except drought years.

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