

## Ecological site R035XY006UT Alkali Fan (Valley Saltbush)

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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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Composition (Indicators 10 and 12) based on	Annual Production

### Indicators

- Number and extent of rills:** Significant development of rills. Rills present should be long (>20 feet) and not very widely spaced. Due to the geomorphic location, this site transports sediments, so rills that are present are often active (not muted). Rills form on this site due to it's fine textured soils and geomorphic location which is adjacent to steep sites that produce runoff in most storm events.
- Presence of water flow patterns:** Flow patterns are usually straight and show evidence of erosion. They are expected to be long (< 20ft long), narrow (less than 1 foot), and not widely spaced (5-10 feet), with some evidence of deposition. Evidence of flow (increased length, erosion/deposition) will increase somewhat with slope.
- Number and height of erosional pedestals or terracettes:** Plants may show some pedestalling on their down slope side, a very few may show exposed roots. Terracettes should be very few and stable where sediment accumulates behind litter dams. Interspaces between well developed biological soil crusts (if present) may resemble pedestals but they are actually a characteristic of the crust formation.
- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 25 - 30%. Ground cover is based on the first raindrop impact, and bare ground is the opposite of ground cover. Ground cover + bare ground = 100%. Poorly developed biological soil crust that is interpreted as functioning as bare ground and therefore 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:** Very few. May be found where adjacent sites or watersheds provide concentrated flows onto the site. Gullies should show only minor signs of active erosion and should be mostly stabilized with perennial vegetation, unless a recent storm event has occurred. Gullies may show slightly more indication of erosion as slope steepens, or as the site occurs adjacent to areas that produce concentrated flow patterns, or following large storm events.
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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 expected to be 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 with deposition occurring at points of obstruction, especially following large 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 an average soil stability rating of 2 - 3 across the site using the soil stability kit test. Surface texture varies from gravelly clay loam to fine sandy loam, saline. Vegetation cover, litter, 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 horizon is 3 to 5 inches deep. Structure is weak platy to weak thick to very thick vesicular platy structure parting to weak fine granular. Color is very pale brown (10YR6-8/3). 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:** Vascular plants are expected to break raindrop impact and splash erosion. Spatial distribution of vascular plants slows runoff somewhat by obstructing surface flows to help create sinuous flow patterns that dissipate energy and allow time for some infiltration. Natural erosion would be expected in severe thunder storms or heavy spring runoff. When perennial grasses 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. The higher clay content, platy structure and potential for vesicular crusts on this site should not be confused with 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: Non-sprouting shrubs (Castlevalley saltbush) >= perennial grasses (James' galleta, Indian ricegrass).

Sub-dominant: perennial forbs > sprouting shrubs = 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, Intermediate wheatgrass, etc.)

Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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

Additional: Temporal variability is caused by large precipitation events, insect infestations, drought, etc. and spatial variability is caused by adjacency to other sites that produce runoff, soil pH levels, and topography.

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

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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, up to 20% of the plants may die. There may be partial mortality of individual bunchgrasses and other shrubs during less severe drought.
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14. **Average percent litter cover (%) and depth ( in):** Litter cover (including under plants) nearly all of which should be fine litter. Depth should be 1 leaf thickness in the interspaces and up to 1/8" under canopies. Litter cover may increase to 3-12% on some years due to increased production of annual plants.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 720 #/acre 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:** Russian thistle, halogeton, mustard, filarie, other native and non-native annual forbs and cheatgrass.
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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in most years, except in drought years.
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