

Ecological site R035XY115UT Desert Sand (Sand Sagebrush)

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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, increasing as slope steepens. Rill development will increase following large storm events, but rills heal within a few months due to the very sandy soil textures

2. **Presence of water flow patterns:** Very rare due to extreme drainage and high infiltration that prevents overland flow in all but the most extreme precipitation events

3. **Number and height of erosional pedestals or terracettes:** Rare. Herbaceous plants may show little pedestalling. Pedestals may be up to 2 inches for shrubs. Terracettes should be absent or few. Pedestals that occur are usually associated with natural wind erosion.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 40 – 50% bare ground. Ground cover is based on the first raindrop impact, and bare ground is the opposite of ground cover. Any well developed biological crusts present 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.

5. **Number of gullies and erosion associated with gullies:** None to very few. Some gullies may be present in landscape

settings where increased runoff may accumulate (such as areas below exposed bedrock). Such gully development is expected to be limited to steeper slopes and be adjacent to sites where runoff accumulation occurs. Any gullies present should show little sign of accelerated erosion and should be stabilized with perennial vegetation.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Some wind generated soil movement is normal. This site has the appearance of dunes that have been healed over. Wind caused blowouts and deposition are mostly stable or have healed over. Coppice mounding around perennial vegetation is common. Increased wind generated soil movement can occur during severe wind events.

7. **Amount of litter movement (describe size and distance expected to travel):** Most litter resides in place (under plant canopies) with some redistribution caused by wind and water movement. Very minor fine litter removal may occur in flow patterns or rills with deposition occurring at points of obstruction. The majority of litter accumulates at the base of plants. Some grass leaves and small twigs (grass stems) may accumulate in soil depressions adjacent to plants. Woody litter is not likely to move.

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 3 to 4 throughout the site. Surface texture is fine sand.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A horizons is not present. The C1 horizon/Soil surface is typically 2 inches deep. Structure is typically weak thick platy. Color is typically reddish yellow (5YR6/6). Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Vascular plants will break some raindrop impact and splash erosion, but not eliminate it. Interspaces between plants may serve as water flow patterns during extreme runoff events, with natural erosion expected in severe storms. When perennial grasses decrease, reducing ground cover and increasing bare ground, runoff is expected to increase and any associated infiltration reduced.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.

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: Perennial cool season bunchgrasses (Indian ricegrasses) > sprouting shrubs (Sand sagebrush)

Sub-dominant: Perennial warm season grasses (Sand dropseed, Sand muhly) > non-sprouting shrubs (Fourwing saltbush) > forbs (globemallow, buckwheat, primrose).

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. Siberian wheatgrass, Forage kochia, etc.)

Biological soil crust typically does not occur on this site and is measured as a component of ground cover.

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

Additional: Temporal variability is caused by drought, insects, large precipitation events, and infrequent fire. Spatial variability is caused by differences in soil texture and proximity to runoff producing sites, etc.

Following a recent disturbance such as fire or drought that removes the woody vegetation, forbs and perennial grasses (herbaceous species), and sprouting/rhizomatous shrubs may dominate the community. This site is never without disturbance. Soil movement by wind is always burying or unburying shrubs, so the community gains and loses sand sage and it typically doesn't naturally become dominant to the exclusion of the understory. These conditions reflect community phases within the reference state.

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. Some mortality of bunchgrass and other shrubs may occur during very severe (long term) droughts.
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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 1/2" under canopies. Litter cover may increase to 5-10% on some years due to increased plant production.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 370 - 400 #/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, other annual forbs, and rush pea 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 most years, except in drought years.
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