

Ecological site R035XA115AZ Sandstone Upland 10-14" p.z.

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

Indicators

- Number and extent of rills:** A few rills may form on the steeper slopes due to sandy loam and loam textures, moderate permeability, shallow depth, rapid runoff, and high amount of bare ground.

- Presence of water flow patterns:** Water flow patterns may be common due to moderate permeability, shallow depths, rapid runoff, and high amount of bare ground. There will be more water flow patterns in the steeper areas adjacent to rock outcrop or very shallow (<10" deep) soils.

- Number and height of erosional pedestals or terracettes:** Some pedestals and terracettes may form, but they should be very short.

- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** There may be as much as 60% bare ground on sites with low surface rock fragments. This site has a very low available water capacity (1-2 inches), so it has a very low plant cover potential except in areas where plants have access to water in sandstone bedrock cracks. Areas with more rock outcrop and surface rock fragments will have less bare soil. Drought may cause an increase in bare ground.

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

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Some areas will have small blowouts and minor depositional areas around rock outcrop and plant bases.
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7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous and fine woody litter will be transported in water flow pathways and by wind. Coarse woody litter will generally remain in place. Litter movement may be greater in areas adjacent to rock outcrop and very shallow (<10 inches deep) soils due to increased water flow over the surface.
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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):** Soil aggregate stability values average 4-5 under plant canopy and 3-4 in the interspaces. Soil surface texture ranges from loamy sand to fine sandy loam, but is mostly sandy loam, fine sandy loam, or loam. Many surface horizons are channery, but some have flagstones or gravels or no rock fragments at all. When well vegetated, these soils have a moderate to high resistance to water erosion and a low to moderate resistance to wind erosion.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure may be single grain, platy (weak, thin to medium), or granular (weak to moderate, fine to medium). Surface thickness is generally 1-2 inches. Color is variable depending upon 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 patchy distribution of mostly grasses and scattered trees. The plants grow mostly in areas with good soil development or access to water in bedrock cracks. Canopy cover averages about 25% (5% trees, 3% shrubs, 17% grasses). Basal cover averages about 8% (1% trees, 1% shrubs, 6% grasses). Canopy and basal plant cover is reduced by an increased amount of rock fragment and bedrock ground cover. Both plant cover values decrease during a prolonged drought. This type of plant community is slightly to moderately effective at capturing and storing precipitation.
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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. Due to sandy loam, fine sandy loam, and loam textures in the surface horizons, these soils may be easily compacted below 3" when wet. But they are generally protected by channers or other size rock fragments within the surface horizons. Some of the soils have a naturally platy surface structure.
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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 grasses >
- Sub-dominant: cool season grasses > large shrubs > forbs
- Other: half-shrubs >= trees > succulents
- 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 survival in all but the most severe droughts. Severe winter droughts affect the shrubs and trees the most. Severe summer droughts affect the grasses the most. Very shallow (<10" deep) soils will show the most mortality in all functional groups, except in areas where the plants have access to water in bedrock cracks.
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14. **Average percent litter cover (%) and depth (in):** Mostly herbaceous litter with some woody litter. Litter amounts increase during the first few years of drought, then decrease in later years.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 350-400 pounds per acre (dry weight) in dry years; 400-600 pounds per acre in average years; 600-700 pounds per acre in wet years. Pounds per acre will be reduced by the amount of rock outcrop found on the site.
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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, rabbitbrush, Mormon tea, oneseeded juniper, and Colorado pinyon are all native to the site, but they have the capacity to increase after many years of heavy grazing. Tall tumbled mustard, cheatgrass and Russian thistle are exotic plants that may invade this site.
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17. **Perennial plant reproductive capability:** All plants native to the site are adapted to the climate and are capable of producing seeds, stolons and rhizomes in all but the most severe droughts.
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