

Ecological site R038XA106AZ Limy Upland 12-16" 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	S. Cassady
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** A few rills may form due to loamy textures, slow permeability, and medium to rapid runoff. Rills may be more common on shallow soils and steeper slopes; less common on deeper soils, gentler slopes, and soils with a lot of rock fragment armor on the surface and within the surface horizon.

- Presence of water flow patterns:** Water flow patterns may be common due to slow permeability and medium to rapid runoff. Water flow patterns will be more common on steeper slopes and shallow 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):** One area had 30% bare ground. If a wet winter and spring produces a flush of annuals, there will be less bare ground. This site has an average available water capacity of 7 inches, so it has a low (shallow soils) to moderate (deep soils) potential to produce plant cover. Areas with a higher cover of rock fragments have less bare ground. Drought may cause an increase in bare ground.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

7. **Amount of litter movement (describe size and distance expected to travel):** Herbaceous and fine woody litter will be transported in water flow pathways. Coarse woody litter will remain under shrub and tree canopies.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values average 4 both under plant canopy and in the interspaces. Soil surface textures are mostly sandy loam, loam, and fine sandy loam. The surface horizon may have no rock fragments or it may be very gravelly. When well vegetated, the soils have a moderate to high resistance to water erosion and a moderate resistance to wind erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure can be granular (weak to moderate, very fine to fine), platy (weak to moderate, medium to moderately thick), or subangular blocky (weak to moderate, fine). Surface thickness ranges from 1-5 inches. Color is variable depending upon parent material.

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 relatively even distribution of mostly grasses with some shrubs and a few forbs. There may be up to 25% tree cover in higher elevations with very shallow to shallow soils. Canopy cover on one shallow area was 60% (40% grass, 2% forbs, 2% shrubs, and 20% trees). Basal cover was 13% (all grass). Both canopy and basal cover values decrease during a prolonged drought. This type of plant community is moderately effective at capturing and storing precipitation.

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, loam, and fine sandy loam surface textures, the soils may be easily compacted if there are no coarse fragments within the surface horizon. Some surface horizons, however, are naturally platy.

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: none

Sub-dominant: warm season colonizing grasses = warm season bunchgrasses > deciduous or persistent shrubs > cool season bunchgrasses >

Other: minor: forbs > evergreen shrubs >

Trace: Agave family > cacti = trees > annual grasses

Additional:

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 years except during the most severe droughts.

Severe winter droughts affect shrubs and trees the most. Severe summer droughts affect grasses the most.

14. **Average percent litter cover (%) and depth (in):** Mostly herbaceous litter with some woody litter. Litter amounts increase during the first few years fo 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):** 450-575 pounds per acre (dry weight) during drought years; 575-800 pounds per acre during median years; 800-900 pounds per acre during wet years.
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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 is native to the site, but has the potential to increase and dominate the area after heavy grazing. Juniper is native to the site, but can also increase after heavy grazing and fire exclusion. This site includes shallow soils, however, which can support a moderate amount of trees (up to 25% cover). Rubber rabbitbrush is a native plant that may invade and dominate the site after soil disturbance, overgrazing, or fire. Portulaca (purslane) and Amaranthus (pigweed) are native or exotic forbs that may invade and dominate the site after soil disturbance, overgrazing or fire.
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17. **Perennial plant reproductive capability:** All plants native to the site are adapted to the climate and are capable of producint seeds, stolons, and rhizomes in most years except during the most severe droughts.
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