USDA Natural Resources
Conservation Service

Ecological site R038XA117AZ
Volcanic Hills 12-16" p.z. Clayey

Accessed: 05/11/2025

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.

Author(s)/participant(s)	Globe ESS, Dan Robinett, Wilma Renken
Contact for lead author	USDA NRCS Globe Soil Survey Office
Date	07/01/2014
Approved by	Byron Lambeth
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** A few natural rills are present and seem to follow fault lines or bedding planes of the volcanic parent material.

2. **Presence of water flow patterns:** Water flow patterns occupy about 10% of the area. They are very short (2-5 ft.) in length and discontinuous where gravel/rock cover is high (>35%). They are terminated by cobble cover and / or terracettes of perennial grasses, shrubs and cacti. They are longer (10-15 ft.) where gravel/rock covers are low (< 20%).

3. **Number and height of erosional pedestals or terracettes:** Erosional pedestals are very uncommon. High cover values of gravel, cobble and stones result in surface stability. Terracettes are common, cover less than 10% of the area and usually are formed by a combination of cobbles, perennial grasses, cacti and shrubs. They are from 10 to 30 feet apart and have elevation differences of 2 to 4 inches.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 1 to 15% (from cover estimates in 10, 9.6 sq.ft. frames). Bare, non-vegetated, areas are large, not connected.

5. **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):** All litter is staying in place, except in water flow patterns where herbaceous litter moves a few feet.

---

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface has high organic content both under plant canopies and in pockets of bare soil surrounded by cobbles (slake values 4-6).

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is granular to sub-angular blocky. The A horizon is 1-3 inches thick and is very dark colored (10YR 3/2).

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Cover of perennial grasses range from 20-30%, cover of shrubs and cacti range from 10-25%. Basal cover of perennial plants ranges from 3-6%. Covers of gravels, cobbles and stones range from 40 to 85%. The cover of all plant species is well-distributed across the area.

---

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 grasses >= shrubs

    Sub-dominant: annual forbs and grasses > succulents > perennial forbs

    Other:

    Additional: in “El Nino” years, annuals exceed all other groups

---

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Less than 1% of shrubs and perennial mid-grasses show signs of mortality. Curly mesquite and slender grama on warm exposures can lose up to 75% of their basal cover during several years of drought.

---

14. **Average percent litter cover (%) and depth (in):**

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** From ecological site description annual production is; 700 lbs/ac(drought), 1000 lbs/ac(average year), 2000 lbs/ac (wet year).

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:** whitethorn acacia, mesquite, one-seed juniper, snakeweed, prickley pear, red brome, cheatgrass, wild oats, canotia

17. **Perennial plant reproductive capability:** Not impaired in any way for shrubs and mid-grasses. Short grasses growing on warm exposures will not produce seed during several years of severe drought.