Ecological site R040XD019CA
Coarse Gravelly Wash

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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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Date	11/03/2014
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Many rills may be present with less than 10 feet apart, especially after intense storm events during exceptionally dry periods. Within this ephemeral stream system rills gently merge in and out of water flow patterns.

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2. **Presence of water flow patterns:** Yes, water flow patterns should be expected as this is an ephemeral stream system. Water flow patterns are extensive throughout this site except on alluvial terraces, bars, or stream terraces. These landforms may have some water flow patterns from intense storms but will not have extensive water flow patterns like the main river wash areas. A great amount of spatial and temporal variability of water flow patterns within ephemeral stream systems should be expected.

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3. **Number and height of erosional pedestals or terracettes:** Rarely any terracettes at this site but few debris dams may be present among plants within the ephemeral stream. Some plants may be pedestalled, especially after flash flooding events. The number of debris dams and pedestalled plants within desert washes are often a reflection of the rangeland health of the upland portions of the ephemeral stream's watershed. Removal of plants by drought, fire, land clearing (such as roads), and/or heavy grazing in the surrounding uplands will amplify flash flooding effects.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is between 5-10% due to a high surface fragment cover.

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5. **Number of gullies and erosion associated with gullies:** This is an ephemeral stream which is essentially synonymous with a gully.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** There are no blowouts but many areas of this ESD are washed out. Many flooding borne depositional areas exist throughout this site from fine silt to gravels and cobbles.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is extensive with medium woody material moving great distances in the most active portions of the ephemeral stream system.

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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):** Most of the wash is 0 to 1 single grain structure with some cementation. Some areas under shrubs can have a stability value up to 3.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure can be structure-less weak fine subangular blocky structure or moderate thin platy structure. If an A horizon exists, it is usually pale brown (dry) and up to 2 inches thick. Being a wash, A horizons may not exist and should be expected to be highly variable in both color and depth.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plants are widely spaced perennial shrubs. Annual plant growth is limited to bars protected from frequent flooding events. Gravels, cobbles and loose sand probably influence infiltration more than the sparse perennial plant composition. In portions of the ephemeral stream where removal processes are greater than depositional processes, then cemented layers maybe exposed at the surface. Cemented layers will reduce infiltration. Runoff is generally downstream and can contribute to channel migration processes.

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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. Platy or massive sub-surface horizons, not to be interpreted as compacted 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: Mixed Desert shrubs

    Sub-dominant: Annual forbs > perennial grasses

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant mortality is random and based on which plants have been uprooted during a flash flood. Perennial

grasses are likely to be the first to exhibit mortality during drought.

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14. **Average percent litter cover (%) and depth (in):** Litter cover may increase as time since last precipitation event increases. Flash flooding moves much of the litter either further downstream or under shrubs. Litter cover is usually individual pieces of plant debris rather than an accumulated layer of litter. Litter cover averages between 5-10% cover.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For normal or average growing season, in the mid-elevation range of this ecological site and the main channel vegetation of this ecological site, annual production is ±900 lbs/ac.

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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:** Potential invaders on this site include red brome, Mediterranean grass, and redstem filaree. Annual species are unlikely to dominate this ecological site as seeds are often washed away.

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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average and above-average growing season years. Little reproduction occurs in drought years. Even during low intensity drought years, ephemeral streams may have a higher reproductive capability than the surrounding upland landforms because water from precipitation events is concentrated into these areas.
