Ecological site R035XY306UT
Upland Loam (Basin Big 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:** None to very few. Any rills present should be short in length (less than 6 feet long) and only occur where increased runoff on lower part of steeper slopes and areas below exposed bedrock. An increase in rill formation may be seen after disturbance events such as recent fire or episodic thunderstorms.

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2. **Presence of water flow patterns:** None to few. Flow patterns wind around perennial plant bases and should show little to no evidence of erosion. They are short (less than 3 feet long) and stable, not connected.

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3. **Number and height of erosional pedestals or terracettes:** rare-Plants should show little or no pedestalling. Terracettes should be absent or few.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 35-40% bare ground. Ground cover is based on the first raindrop impact, and bare ground is the opposite of ground cover. Well developed biological soil crusts 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.

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5. **Number of gullies and erosion associated with gullies:** None to very few. Gully development is expected to be

limited to slopes exceeding 20% and adjacent to sites where runoff accumulation occurs. Any gullies present should show little sign of accelerated erosion and should be stabilized with perennial vegetation.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Minor evidence of wind generated soil movement, slight deposition at the base of shrubs. Wind caused blowouts and depositions are not present.

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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 water movement. Minor litter removal may occur in flow patterns and 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 stems not likely to move.

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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):** This site should have a soil stability rating of 5 to 6 under the plant canopies using the soil stability kit test, and a rating of 3 to 5 in the interspaces. The average should be a 5. Vegetation cover, litter, biological soil crusts and surface rock reduce erosion.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface varies from 2 to 3 inches thick. Structure is thin platy. Color is reddish brown (5YR5/4). There is little if any difference under canopy or in interspaces and a recognizable A horizon is expected to be present throughout. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Bare spaces are small and rounded in shape and are usually not connected, Perennial cool and warm season grasses, sagebrush, biological soil crusts are usually distributed in sufficient density to intercept raindrops, increase surface detention of water, to increase infiltration and reduce erosive energy of runoff. When perennial grasses decrease, reducing ground cover and increasing bare ground, runoff would be expected to increase and associated infiltration would be reduced. A reduction in vegetative structure can reduce snow capture.

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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. Some soils have increase in clay content at 3 to 9 inches that could be mistaken for a compaction layer. Naturally occurring hard layer (clay, calcic horizon) should not be considered as compaction 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: Perennial bunchgrasses = non-sprouting shrubs

    Sub-dominant: rhizomatous grasses = sprouting shrubs = forbs

    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. Crested wheatgrass, Intermediate wheatgrass, Small burnet,

etc.)Biological soil crust is variable in its expression where present on this site and is measured as a component of ground cover.

Additional: Disturbance regime includes fire, insects, and drought. Assumed fire cycle of 40-60 years. Following a recent disturbance such as fire, drought, or insects that removes the Sagebrush vegetation, forbs and perennial grasses (herbaceous species) may dominate the community. If a disturbance has not occurred for an extended period of time, sagebrush and juniper may continue to increase crowding out the perennial herbaceous understory species. In either case, these conditions could reflect a functional community phase within the reference state.
Dominants: Indian ricegrass, Basin big sagebrush; Sub-dominants: Fourwing saltbush, Western wheatgrass. The perennial grass and non-sprouting shrub functional groups are expected on this site. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** All age classes of perennial grasses should be present under average to above average growing conditions with age class expression likely subdued under below average conditions, or on sites with high (usually greater than 65%) similarity index (late seral to historic climax). Slight decadence in the principle shrubs could occur near the end of the fire cycle. In general, a mix of age classes may be expected with some dead and decadent plants present.

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

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 950-1000

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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:** Cheatgrass, Snakeweed, Utah juniper, Pinion, Green rabbitbrush, Annual forbs, and other annual grasses.

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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.
