

## Ecological site R051XA001NM Loamy

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

### Indicators

- Number and extent of rills:** None to very rare. Some minor rilling may be found on slopes greater than five percent after fire and a severe storm event. Rills are widely spaced and short.

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- Presence of water flow patterns:** None to very rare. Following intense rainfall events, there may be a few and short (3-6 feet) water flow patterns which are not connected. On slopes greater than five percent, following fire and rain, flow patterns may extend up to 10 feet, but still be widely spaced.

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- Number and height of erosional pedestals or terracettes:** Very minor. Plant or rock pedestals and terracettes are almost always in water flow patterns. Some build up of soil occurs under sagebrush due to settling of wind-blown material.

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- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 20% or less bare ground, with bare patches ranging from 6-10 inches in diameter. Prolonged drought or wildfire events will cause bare ground to increase upwards to 20-30% with bare patches ranging from 10-12 inches in diameter.

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- Number of gullies and erosion associated with gullies:** No gullies are actively eroding. Some stable gullies may be present in landscape settings where off-site drainage exists, caused by natural events such as fire followed by an

intensive rainfall event. Gullies are shallow with blunted edges and are re-stabilizing.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind erosion is very minor on this site, occasionally showing deposition under shrub canopy. Minor erosion can occur following periods of severe wildfires and extended drought.

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7. **Amount of litter movement (describe size and distance expected to travel):** Most litter is leaves and small stems. Movement will mostly occur in flow patterns for distances of 1-3 feet following intense rainfall events and depositing where the slope flattens out. Woody litter (if present) should not move from beneath or adjacent to the plant.

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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 4-5 in the interspaces and 5-6 underneath plants.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The dominant series is the Tenorio, which consists of deep, well drained soils that formed in stratified gravelly, cobbly and sandy alluvium. The typical pedon contains an A horizon (0-3 inches), followed by a B1 (3-9 inches), and a B2t (9-14 inches.) The texture of the A and B1 is fine loamy, while the B2t is a clay loam. The A1 is dark yellowish brown (7.5YR 3/2) moist, with weak, fine granular structure. The B1 is reddish brown (5YR 4/3) moist, with weak fine subangular blocky structure parting to weak fine granular. These soils have a high water holding capacity along with moderate permeability.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The composition/distribution of cool rhizomatous grasses, bunchgrasses and scattered shrubs tend to slow overland flow and reduce raindrop impact while improving infiltration. Due to the nature of loam to clay loam soils all structural components are needed to promote infiltration and reduce runoff.

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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):** There should be no compaction layer on this site. Due to the loamy texture of this soil and the presence of an argillic horizon, this soil could compact easily with disturbance, such as vehicle traffic, recreation, or plowing.

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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: Dominant: Cool Season rhizomatous grass (Western wheat) >

Sub-dominant: Sub-dominant: cool season bunchgrasses > shrubs=warm season grasses >>

Other: Others: forbs (annual and perennial)>trees (pinon).

Additional: In the natural range of variability, sagebrush increases over time until fire moves through the system, knocking back the sagebrush and invigorating the western wheat. Extreme herbivory in the spring and early summer, coupled with winter drought will also decrease the cool season component. Occasionally trees (pinyon) will invade on this site if fire frequency has been greatly diminished.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** During years with average to above-average precipitation, there should be very little recent mortality or decadence apparent in either the grasses or shrubs. Some mortality of cool season grasses may occur during severe winter droughts. Repeated herbivory during the critical growing period for western wheat (May and June) will increase mortality for the cool season rhizomatous component. Shrub mortality would be limited to severe, multiple year droughts. Very little decadence occurs on this site.
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14. **Average percent litter cover (%) and depth ( in):** Litter cover ranges from 30-40%. Litter cover during and following drought can range from 15-20%, and 5-15% following wildfire. Litter depth is higher under shrubs.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Long term average is 335 lbs/ac; 660 lbs during unfavorable conditions; 950 lbs for favorable conditions. Severe, extended drought can reduce production to an very low level of 200-400 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:** Tree species such as pinon and juniper can invade this site causing decreased hydrologic function. At times shrubs such as sagebrush and rubber rabbitbrush can dominate due to various forms of disturbance or lack of disturbance.
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17. **Perennial plant reproductive capability:** During years with average to above average growing conditions, all perennial plants should have the ability in most years to produce seed, tillers, or sprouts. Natural events that cause limitations to plant reproductive capability include: wildfire, drought, natural disease, inter-species competition, insect cycles, and wildlife activity.
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