USDA Natural Resources
Conservation Service

Ecological site DX034A02X120
Limy Pinedale Plateau (Li PP)

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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	08/20/2018
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Not expected for the site, but could be present on slopes greater than 8%. When present, rills are short and widely spaced relative to slope distance.

2. **Presence of water flow patterns:** Water patterns are not expected for this site, but can be present when slopes exceed 8%. When present are not common and are very small and not connected beyond 2 gaps in the plant canopy.

3. **Number and height of erosional pedestals or terracettes:** Active pedestals are not common, when found are blunt and not active and less than 2 inches (5cm). Terracettes are not expected.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground <25% expected. Canopy gaps comprise up to 30% of the ground surface, and are primarily in the 1-2 ft category (25%) with 5% in both the 2-3 foot and 3-6 ft categories. Canopy gaps >6 ft are not expected. Basal gaps up to 65% are expected (25% in 1-2 foot, 15% in 2-3 foot, 20% in 3-6 foot, and up to 5% >6 foot).

5. **Number of gullies and erosion associated with gullies:** Gullies are not expected.

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind scour, blowouts and/or depositional areas are

not expected for this site.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter (herbaceous and fine woody) expected to move only in small amounts due to wind or in water flow patterns found on slopes >8%.

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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):** Soil Stability Index ratings are expected to be variable for plant canopy and interspaces. Values of >5 are expected when sample includes soil biological crusts or is taken under plant canopy, and values 4 to 5 are expected in the interspaces. Average values >5 are expected.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil organic matter (SOM) <2% is common. Color and structure are poor indicators of SOM in Inceptisols (semi-arid soils with only moderate soil development) because SOM potential is low. Typically soil surface consists of an A-horizon of 1-3 inches (3-8 cm) thick with very fine platy to granular structure that is pale brown (i.e. 10YR 6/3 dry) in color. Field indicators of departure from the reference condition include exposure of subsoil with strong, sub-angular blocky structure as evidenced by excessive pedestalling and/or surface disturbance.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** The reference state consists of 50% perennial grasses, 10% forbs, and 40% shrubs (predominantly sub-shrubs) composition by dry weight. Infiltration is moderate resulting in moderate runoff potential. Foliar cover (plant canopy)Basal plant cover 5-10% is expected for this site.

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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 expected. A dry subsurface will often refuse a probe, causing misidentification of a compaction layer. Most soil profiles must be described by hand dug holes.

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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:

    Sub-dominant:

    Other:

    Additional: 1 Mid-size, cool season perennial bunchgrassesevergreen sub-shrubscool season rhizomatous perennial grasses =short, cool season perennial bunchgrasses=perennial forbsother shrubsannual forbs

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Minimal decadence is expected. It is common to find dead matter accumulated in bunchgrasses, but live plant matter quantity should exceed standing dead except for in times of severe drought.

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14. **Average percent litter cover (%) and depth (in):** Litter ranges from 10-20% of total canopy measurement with total litter (including beneath the plant canopy) 35-55% expected. Herbaceous litter depth is typically very shallow, approximately 1-2mm. Woody litter is fine, mostly <1” in diameter (3cm), and is scattered and sporadically distributed (not layered or in piles).

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** English: 350-750 lb/ac (550 lb/ac average); Metric: 392-840 kg/ha (616 kg/ha average).

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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:** Annual weeds such as desert alyssum, halogeton, kochia, lambsquarter, flixweed, and Russian thistle are common weedy species in disturbed sites.

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17. **Perennial plant reproductive capability:** All species are capable of reproducing except in severe drought years. Thickspike wheatgrass will commonly reproduce by underground rhizomes and not by seed production.
