

Ecological site R008XY001ID Very Shallow Stony 12-16 PZ

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Ecological site concept

This ecological site meets the NESH 2014 requirements for PROVISIONAL. A provisional ecological site is established after ecological site concepts are developed and an initial state-and-transition model is drafted. Following quality control and quality assurance reviews of the ecological site concepts, an identification number and name for the provisional ecological site are entered into ESIS. A provisional ecological site may include literature reviews, land use history information, some soils data, legacy data, ocular estimates for canopy and/or species composition by weight, and even some line-point intercept information. A provisional ecological site does not meet the NESH 2014 standards for an Approved ESD, but does provide the conceptual framework of soil-site correlation for the development of the ESD.

Associated sites

R008XY003ID	North Slope Loamy 12-16 PZ
R008XY004ID	South Slope Loamy 12-16 PZ
R008XY005ID	South Slope Stony 12-16 PZ
R008XY006ID	Shallow South Slope 12-16 PZ
R008XY002ID	Loamy 12-16 PZ

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia rigida</i>
Herbaceous	(1) <i>Poa secunda</i>

Physiographic features

This site occurs on canyons and patterned ground generally with south and west exposures. Slopes range from 10-35 percent. Elevations range from 750 to 2400 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain (2) Ridge (3) Canyon
Flooding frequency	None
Elevation	750–2,400 ft
Slope	10–35%

Water table depth	10 in
Aspect	S, W

Climatic features

The elevation of MLRA 8 ranges from 1300 to 3600 feet above sea level. Average annual precipitation ranges from 12 to 17 inches, with a mean of 15 inches based on 4 long term climate stations located throughout the MLRA. In general precipitation peaks in November, December and January, with a sharp decline in July and August. The average maximum annual temperature is 64 degrees Fahrenheit and the average minimum temperature is 41 degrees F. The frost free period can range from 160 to 186 days while the freeze free period ranges from 200 to 237 days.

In addition to the Lewiston and Pomeroy climate stations, the Clarkston and Lower Granite Dam climate stations were used (from the former ESD) to define the average climate conditions.

Table 3. Representative climatic features

Frost-free period (average)	173 days
Freeze-free period (average)	218 days
Precipitation total (average)	17 in

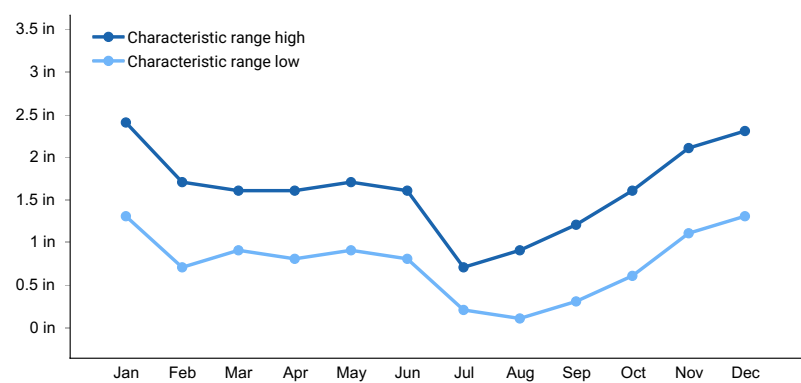


Figure 1. Monthly precipitation range

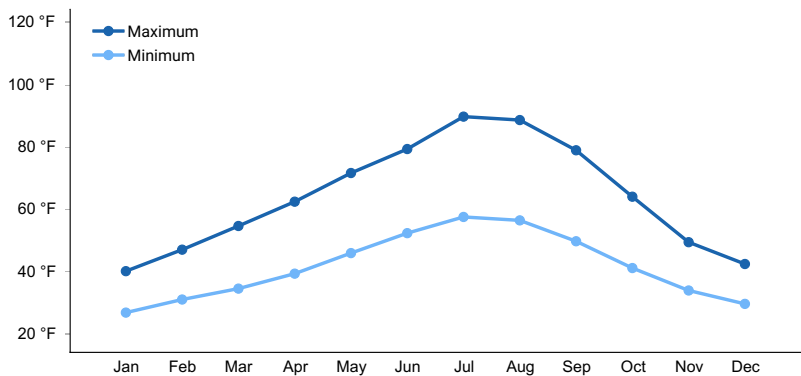


Figure 2. Monthly average minimum and maximum temperature

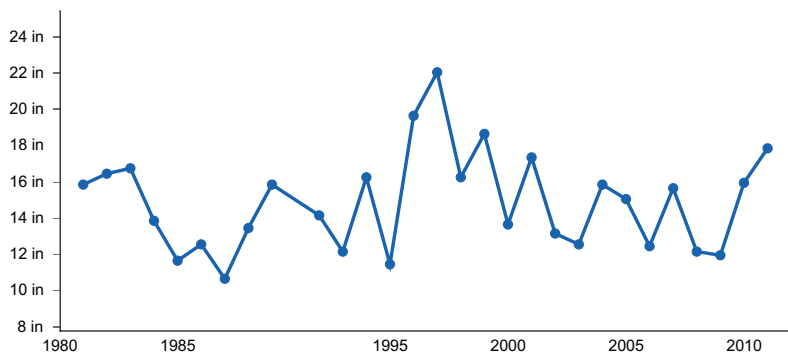


Figure 3. Annual precipitation pattern

Climate stations used

- (1) POMEROY [USC00456610], Pomeroy, WA
- (2) LEWISTON NEZ PERCE CO AP [USW00024149], Lewiston, ID

Influencing water features

This site is not influenced by adjacent wetlands, streams, or run on.

Soil features

Soils on this site were formed in loess and residuum from basalt. They are very shallow, medium textured, stony, and well drained. Permeability is moderately slow and the available water holding capacity (AWC) is low. These soils are usually saturated in the early spring and become droughty in the early growing season.

Table 4. Representative soil features

Parent material	(1) Residuum–basalt
Surface texture	(1) Gravelly loam (2) Very gravelly clay loam
Drainage class	Well drained
Permeability class	Slow to moderately slow
Soil depth	0–10 in
Surface fragment cover <=3"	15–60%
Surface fragment cover >3"	0–10%
Available water capacity (0–40in)	0–1 in
Calcium carbonate equivalent (0–40in)	0%
Electrical conductivity (0–40in)	0 mmhos/cm
Sodium adsorption ratio (0–40in)	0
Subsurface fragment volume <=3" (Depth not specified)	35–90%
Subsurface fragment volume >3" (Depth not specified)	0–10%

Ecological dynamics

The dominant visual aspect of this site is shrub-grassland dominated by stiff sagebrush and Sandberg bluegrass.

Bluebunch wheatgrass can occur on the site at the higher elevations and in areas of deeper soil. Composition by weight is approximately 50 percent grass, 25 percent forbs, and 25 percent shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by warm, dry summers and cold, moist winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores include Rocky Mountain elk, white-tailed deer, mule deer, lagomorphs and small rodents. Fire has historically occurred on this site every 100-125 years. Fire occurs only in years with above normal precipitation.

The Reference State (State 1), moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase 1.1. This plant community is dominated by stiff sagebrush and Sandberg bluegrass. Bluebunch wheatgrass is often present in the community at the higher elevations and where the soil is approaching 10 inches in depth. Subdominant species include buckwheat, balsamroot, western yarrow, and biscuitroot. A wide variety of forbs occur on the site. The plant species composition of Phase 1.1 is listed later under "Reference Plant community Phase Plant Species Composition".

Total annual production is 180 pounds per acre (200 Kg/ha) in a normal year. Production in a favorable year is 240 pounds per acre (266 Kg/ha). Production in an unfavorable year is 120 pounds per acre (133 Kg/ha). Structurally, cool season, shallow-rooted perennial grasses are more dominant than shrubs which are about equal to forbs.

This site is suited for grazing by domestic livestock in the spring. This site is important winter and spring range for big game but is used yearlong. The site provides little recreation or aesthetic value. Due to the stony soils the site is fairly resistant to disturbances that can potentially degrade the site.

Impacts on the Plant Community.

Influence of fire:

This site historically had a very low fire frequency, approximately every 100-125 years. Most of the shrubs evolved in the absence of fire; therefore they can be severely damaged or killed when burned. Cheatgrass and medusahead can be troublesome invaders on this site after fire preventing perennial grass and shrub re-establishment and increasing the fire frequency. Sandberg bluegrass is usually maintained in the community.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. This type of management leads to reduced vigor of all deep-rooted perennial bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in stiff sagebrush, Sandberg bluegrass, sixweeks fescue, and other invasive plants.

Continued improper grazing management influences fire frequency with an increase in cheatgrass and medusahead. Early spring grazing by uncontrolled feral horses or cattle can cause severe damage to the understory if these animals are present when the soils are wet and trampling damage occurs.

Weather influence:

Abnormal weather patterns have little influence on the plant community. The species that occur on the site are all adapted to soils with low water holding capacity. The plants have the ability to become dormant during periods of drought.

Above normal precipitation in March, April and May can increase total annual production. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Extended periods of drought impact this site due to the low water holding capacity and shallow soil. Extreme drought may cause some plant mortality.

Insects and disease:

Outbreaks of insects can affect vegetation health. An outbreak of a particular insect is usually influenced by weather but no specific data is available for this site.

Influence of noxious and invasive plants:

Annual and perennial invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory. Cheatgrass, yellow starthistle, and medusahead can be very invasive on this site, especially after fire. Once they become established the fire frequency increases. As a result, the shrub component can be lost.

Influence of wildlife:

Big game animals use this site yearlong. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff on slopes greater than 10 percent occur when stiff sagebrush is removed with frequent fires, particularly following the fire event.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1. 1.1. Stiff sagebrush/Sandburg bluegrass

Plant Community Phase 1.1 to 1.2 (1.1A). Develops with improper grazing management and no fire.

Plant Community Phase 1.1 to 1.3 (1.1B). Develops with fire.

Plant Community Phase 1.2 to 1.1 (1.2A). Develops with prescribed grazing.

Plant Community Phase 1.3 to 1.1 (1.3A). Develops with prescribed grazing and no fire.

State 1 Phase 1.2 to State 2. Develops with continued improper grazing management and frequent fire (T1B). The site has crossed the threshold. It is not economically feasible to move this state back to State 1 with accelerating practices.

State 1 Phase 1.3 to State 2. Develops through frequent fire or continued improper grazing management (T1A). The site crosses the threshold. It is not economically feasible to move this state back to State 1 with accelerating practices.

State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire (T2.1A) cause this state to cross a threshold and retrogress to a new site with reduced potential. It is not economically feasible to move this state back to State 1 with accelerating practices.

Practice Limitations.

Severe limitations exist on this site for seeding due to excessive stones on or near the surface. Soil depth also limits available water capacity for seedling establishment. Brush management is generally not economically feasible on this site.

State and transition model

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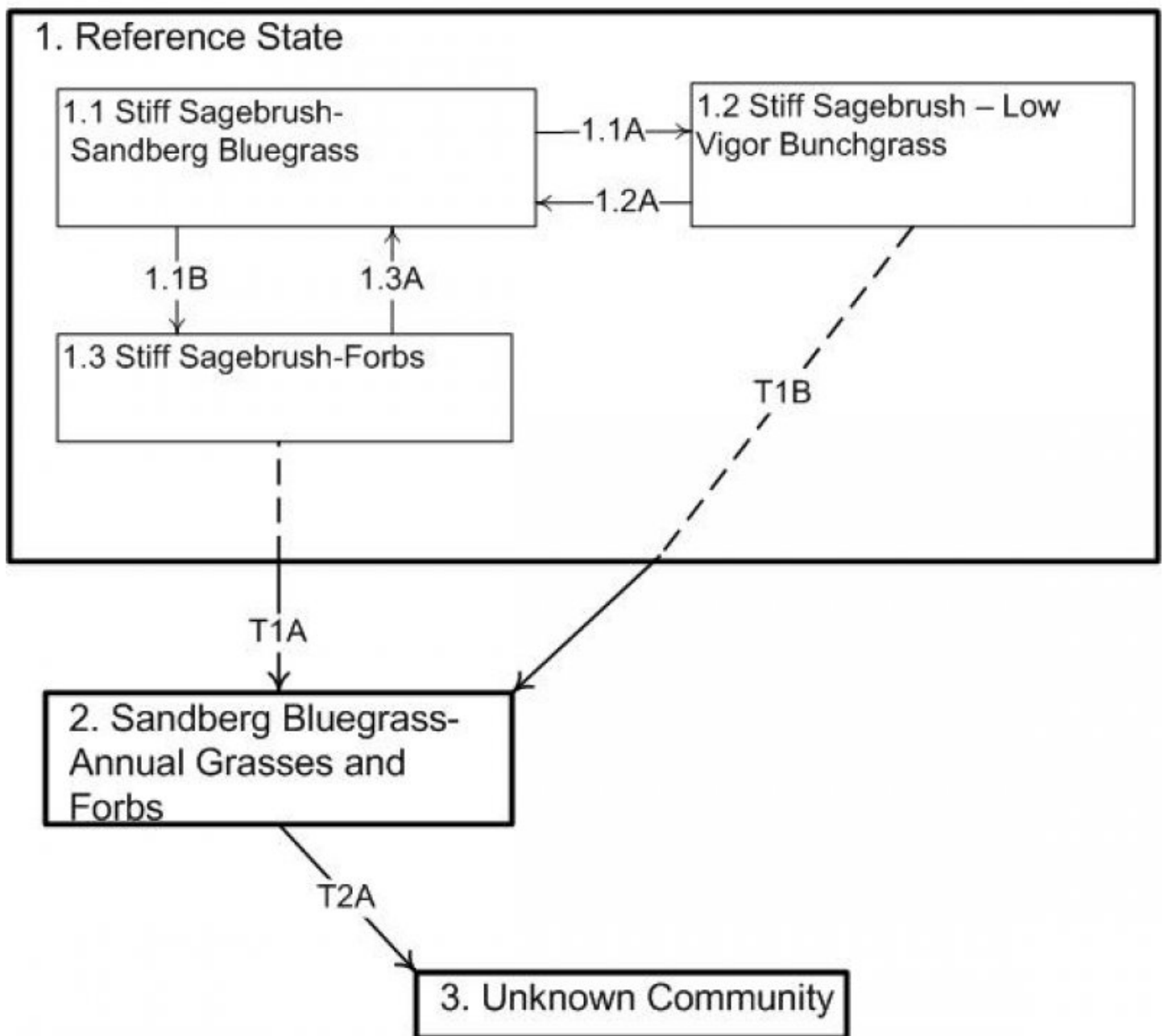


Figure 5. R008XY001ID

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community is dominated by woody and herbaceous vegetation that provides spring, fall, and winter forage for large herbivores. Seasonal habitat is provided for resident and migratory animals including western rattlesnake, jackrabbits, ground squirrels, mice, coyote, red fox, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Noxious and invasive plant species (cheatgrass, ventenata, bulbous bluegrass, and yellow star-thistle) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Water features are sparse, provided by seasonal runoff, artificial water catchments, and springs.

State 1 Phase 1.1 – Stiff Sagebrush/ Sandberg Bluegrass Reference Plant Community (RPC): This plant community provides a limited diversity of grasses, forbs, and shrubs used by native insect communities that assist

in pollination. Flowering forbs and shrubs including yarrow, arrowleaf balsamroot, phlox, biscuitroot, buckwheat, plains pricklypear, and big sagebrush provide spring through fall habitat for pollinators. The reptile and amphibian community is represented by western rattlesnake, northern alligator lizard, pygmy short-horned lizard, and western toad. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Spring developments that capture all available water would preclude the use of this site by amphibians. The sparse plant community supports a variety of migratory and resident avian species with food, brood-rearing, and nesting cover. Species include savannah sparrow, lark sparrow, grasshopper sparrow, Say's phoebe, western kingbird, horned lark, and western meadowlark. The plant community provides spring, fall, and winter forage for mule deer and elk. Stiff sagebrush and Sandberg bluegrass are considered desirable forage for elk and mule deer. The grazing management will determine the quality and duration of grazing available for large herbivores. A small mammal population including Preble's shrew, mountain cottontail, white-tailed jackrabbit, Merriam's shrew, western jumping mouse, and deer mouse may utilize this site.

State 1 Phase 1.2 - Stiff Sagebrush/ Sandberg Bluegrass Plant Community: This phase has developed due to improper grazing management and no fire. A decrease in vigor and production of perennial herbaceous vegetation would reduce the quality of the habitat for pollinators. The reptile and amphibian community is represented by western rattlesnake, gophersnake, terrestrial gartersnake, and western toad. Amphibians are associated with springs adjacent to the site. Spring developments that capture all available water would preclude the use of the area by amphibians. The quality of cover habitat for ground-nesting birds is reduced due to improper grazing resulting in sparse herbaceous vegetation. The reduced vigor of native plants results in a shorter grazing season in the summer and fall for large herbivores. The quality of winter forage may increase for large herbivores due to an increase in stiff sagebrush. Small mammal populations would be similar to those in State 1, Phase 1.1.

State 1 Phase 1.3 - Sandberg Bluegrass Plant Community: This plant community is the result of fire. An increase in forbs would support a similar pollinator community as in State 1, Phase 1.1. The reptile community would also be similar to State 1, Phase 1.1. Quality of cover and forage habitat for birds may be reduced due to the loss of shrub cover. The reduced vigor of plants, improper grazing management, and increase in cheatgrass provides a shorter grazing season for mule deer and elk. Small mammal populations would be similar to those in State 1, Phase 1.1. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for animal species that historically used the site.

State 2 – Cheatgrass/ Annuals/ Sandberg Bluegrass Plant Community: This state has developed due to frequent fires and improper grazing management from Phase 1.2, State 1. It also occurs with frequent fire or improper grazing management from Phase 1.3. This plant community supports harmful insects, such as grasshoppers due to improved breeding conditions. The plant community would support a very limited population of pollinators. Most reptilian species are not supported with food, water, or cover. Diversity of grassland avian species is reduced due to poor cover and food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large herbivores may utilize the herbaceous vegetation in the early part of the year when the invasive annuals (cheatgrass) are more palatable. At other times of the year large herbivores would not regularly utilize these areas due to poor forage and cover conditions. The populations of small mammals would be reduced due to poor cover and forage habitat. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for animal species that historically used the site.

Grazing Interpretations.

This site is best suited for grazing by domestic livestock in the spring. Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference.

Hydrological functions

Soils on this site are in hydrologic group D.

Recreational uses

The site provides little recreation or aesthetic value.

Wood products

None

Other products

None

Other information

Field Office

Lewiston, ID

Moscow, ID

Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, Range Management Specialist, IASCD

Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho

Bruce Knapp, Resource Soil Scientist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

Other references

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.

USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

Contributors

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Dave Franzen And Jacy Gibbs

Approval

Kendra Moseley, 9/23/2020

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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Contact for lead author	Brendan Brazee, State Rangeland Management Specialist USDA-NRCS 9173 W. Barnes Drive, Suite C, Boise, ID 83709
Date	03/17/2009
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- Number and extent of rills:** Rills rarely occur on this site due to the gravelly and stony surface. If they do occur it will normally be on slopes greater than 20%.

- Presence of water flow patterns:** Water-flow patterns are normally not present on this site. When they do occur they are short and disrupted by cool season grasses, shrubs, and surface stones. They are not extensive.

- Number and height of erosional pedestals or terracettes:** Both are rare on the site. Do not misinterpret frost heaving for pedestals.

- Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground ranges from 0-20 percent.

- Number of gullies and erosion associated with gullies:** Gullies do not occur on this site.

- Extent of wind scoured, blowouts and/or depositional areas:** Blowouts and depositional areas are usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

- Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move up to 2-3 feet or further following a significant run-off event. High winds can also move fine litter. Coarse litter generally does not move.

- Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Values should range from 3 to 5.

- Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Structure ranges from weak thin platy to weak and moderate fine granular. Soil organic matter (SOM) ranges from 1 to 3 percent. Surface color is generally dark brown to brown. The A or A1 horizon is typically 2 to 4 inches thick.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Bunchgrasses slow run-off and increase infiltration. Terracettes provide a favorable micro-site for vegetation establishment, which further increases infiltration.
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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):** Not present.
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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: cool season bunchgrasses
- Sub-dominant: shrubs=perennial forbs
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little mortality or decadence is expected on this site. Mortality of shallow rooted grasses may occur due to extended periods of drought. Mortality of stiff sagebrush can occur from large ungulate browsing and trampling.
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14. **Average percent litter cover (%) and depth (in):** Annual litter cover in the interspaces will be 5-10 percent to a depth of <0.1ft. Fine litter can accumulate on the terracettes.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Is 180 lbs. per acre in a year with normal precipitation and temperatures. Perennial grasses produce 50 percent of the total, forbs 25 percent, and shrubs 25 percent.
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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:** Includes cheatgrass, sixweeks fescue, soft chess, ventenata, bulbous bluegrass, medusahead, tarweed, curlycup gumweed, spotted and diffuse knapweed, and yellow star-thistle.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in normal years.
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