

# Ecological site F013XP610ID

## Upland Cool Woodland Group

Last updated: 9/07/2023  
Accessed: 05/17/2024

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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.

### MLRA notes

Major Land Resource Area (MLRA): 013X–Eastern Idaho Plateaus

Major Land Resource Area (MLRA) 13, Eastern Idaho Plateaus, consists of approximately 5 million acres in Idaho with a small part in Utah and Wyoming, it consists of 6 Land Resource Units (LRU). These units are divisions of the MLRA based on geology, landscape, common soils, water resources and plant community potentials. The elevation ranges from approximately 4500 to 6600 feet (1370 to 2010 m) on the plateaus and foothills to as much as 9500 feet (2895 m) on the mountains. Annual precipitation ranges from 10 to 48 inches (254-1220 mm), with the driest areas in the Bear River Valley on the far eastern portion and the wettest areas on the mountain summits. The Fort Hall Indian Reservation and several national forests are in this MLRA, including the Caribou, Cache, and Targhee National Forests. Yellowstone and Grand Teton National Parks occur just outside the northeast boundary.

### LRU notes

LRU P: PES (Provisional Ecological Site or Group - PEG) A PROVISIONAL ECOLOGICAL SITE is a conceptual grouping of soil map unit components within a Major Land Resource Area (MLRA) based on the similarities in response to management. Although there may be wide variability in the productivity of the soils grouped into a Provisional Site, the soil vegetation interactions as expressed in the State and Transition Model are similar and the management actions required to achieve objectives, whether maintaining the existing ecological state or managing for an alternative state, are similar. Provisional Sites are likely to be refined into more precise concept during the process of meeting the APPROVED ECOLOGICAL SITE DESCRIPTION criteria.

This PROVISIONAL ECOLOGICAL SITE has been developed to meet the standards established in the National Ecological Site Handbook. The information associated with this ecological site does not meet the Approved Ecological Site Description Standard, but it has been through a Quality Control and Quality Assurance processes to assure consistency and completeness. Further investigations, reviews and correlations are necessary before it becomes an Approved Ecological Site Description.

### Classification relationships

PSME/ACGL habitat type (Steele Et.Al. 1983)

### Ecological site concept

- Site does not receive any additional water
- Soils are
  - o Generally not saline or saline-sodic
  - o Moderately deep, deep, or very deep
  - o Typically less than 5% stone and boulder on surface (<15%)

- o Soil surface texture ranges from sandy loam to clay loam in surface mineral 4”
- o Duff layer is common

### Associated sites

R013XY016ID	<b>Moist Mountain Loam 20+ PZ POTR</b> Aspen Woodlands are common on the lower edge of Upland Cool Woodlands, especially in areas with snow catch/runoff.
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### Similar sites

F013XP609ID	<b>Upland Cold Woodland Group</b> Upland Cold Woodlands are similar in concept, with a shift in timber species.
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**Table 1. Dominant plant species**

Tree	(1) <i>Pseudotsuga menziesii</i>
Shrub	Not specified
Herbaceous	Not specified

### Physiographic features

This site occurs on most slopes, especially in pockets or concave areas within landslides and other deposits. Average slope is less than 25 percent.

**Table 2. Representative physiographic features**

Landforms	(1) Mountains > Mountain slope (2) Landslide
Runoff class	Negligible to high
Elevation	1,676–2,743 m
Slope	0–60%
Aspect	NW, N, NE, E

### Climatic features

Annual precipitation ranges from 20-25 inches per year. June is generally the wettest month. July, August, and September are somewhat less with daily amounts rarely exceeding one inch. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation.

Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures.

Snowfall is quite heavy in the area. Annual snowfall averages about 150 inches. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring. Prevailing winds are from the southwest, because of the varied topography, the wind will vary considerably for different parts of the area. The wind is usually much lighter at the lower elevations and in the valleys as compared with the higher terrain. Occasional storms, however, can bring brief periods of high winds with gusts exceeding 50 mph. Growth of native cool season plants begins about May 15 and continues to about September 15.

**Table 3. Representative climatic features**

Frost-free period (characteristic range)	38-43 days
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Freeze-free period (characteristic range)	90-94 days
Precipitation total (characteristic range)	508-635 mm
Frost-free period (actual range)	37-44 days
Freeze-free period (actual range)	88-96 days
Precipitation total (actual range)	508-635 mm
Frost-free period (average)	41 days
Freeze-free period (average)	92 days
Precipitation total (average)	584 mm

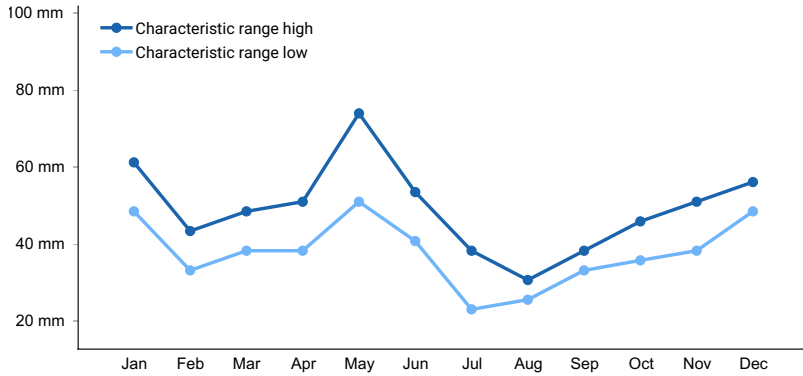


Figure 1. Monthly precipitation range

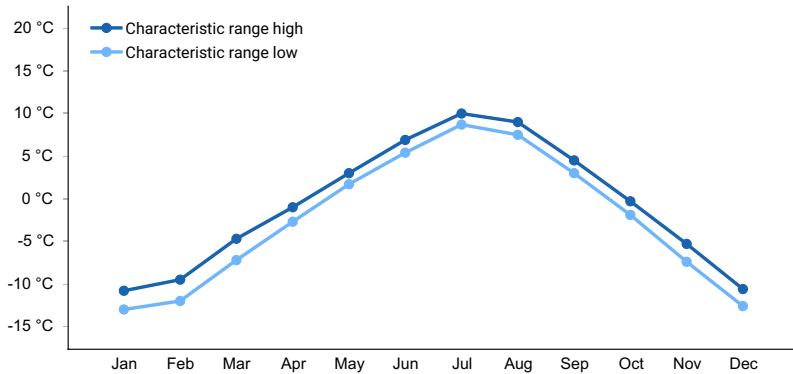


Figure 2. Monthly minimum temperature range

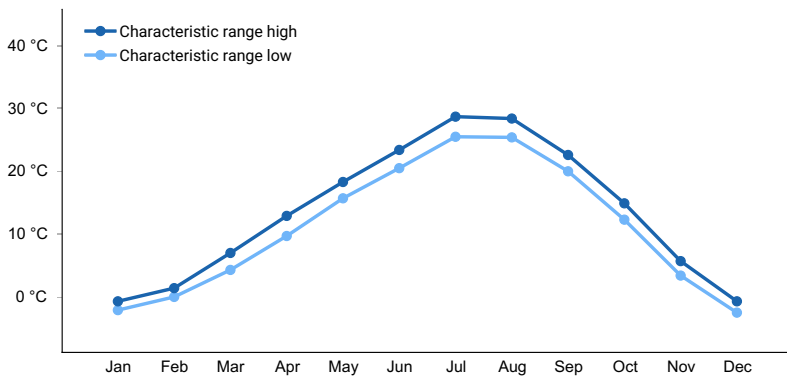
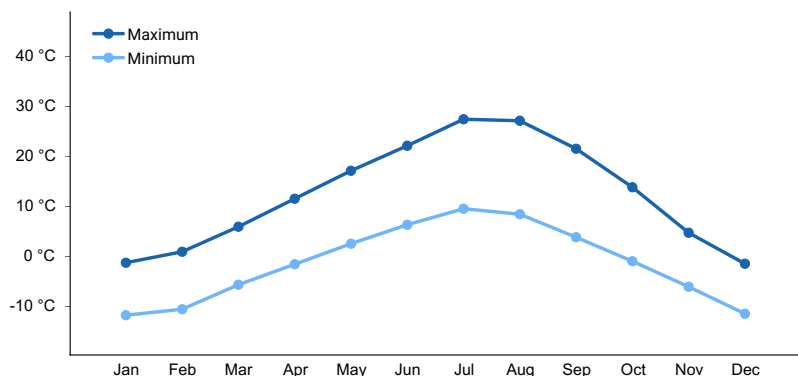
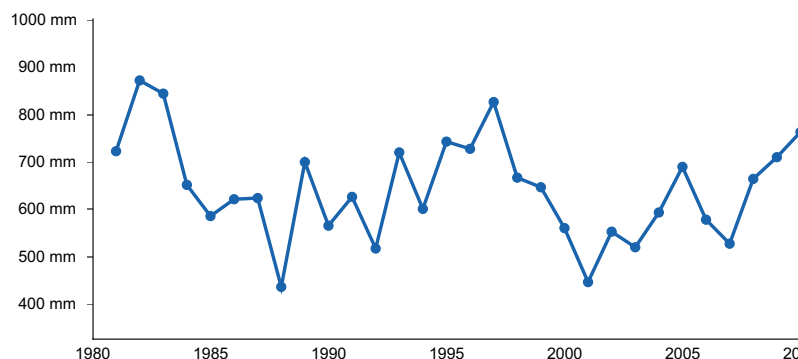


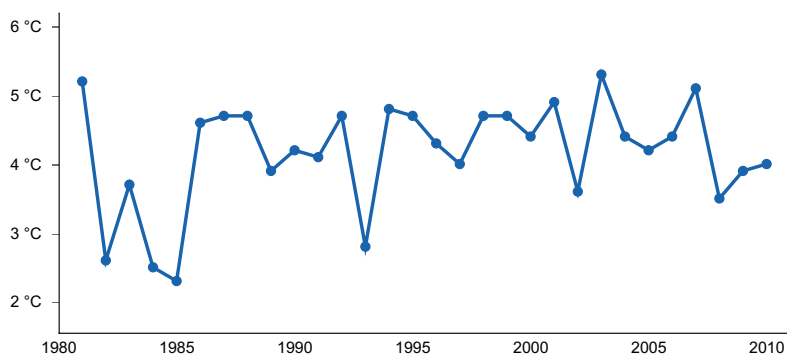
Figure 3. Monthly maximum temperature range



**Figure 4. Monthly average minimum and maximum temperature**



**Figure 5. Annual precipitation pattern**



**Figure 6. Annual average temperature pattern**

### Climate stations used

- (1) ALTA 1 NNW [USC00480140], Alta, WY
- (2) LAVA HOT SPRINGS [USC00105143], Lava Hot Springs, ID
- (3) TETONIA EXP STN [USC00109065], Tetonia, ID

### Influencing water features

This site is not associated with any type of surface water feature. Snow drift impact is moderate.

### Soil features

The soils associated with this site were derived from calcareous sandstone, limestone, quartzite-sandstone mixes, or granitics. These soils are generally greater than 20" in depth. Pockets of deep soil may occur in this site and are moderately acidic. The bedrock will include igneous, metamorphic and sedimentary material. Soil temperature regime is found on the upper extent of frigid and the lower extent of cryic; while, soil moisture regime is typical xeric.

**Table 4. Representative soil features**

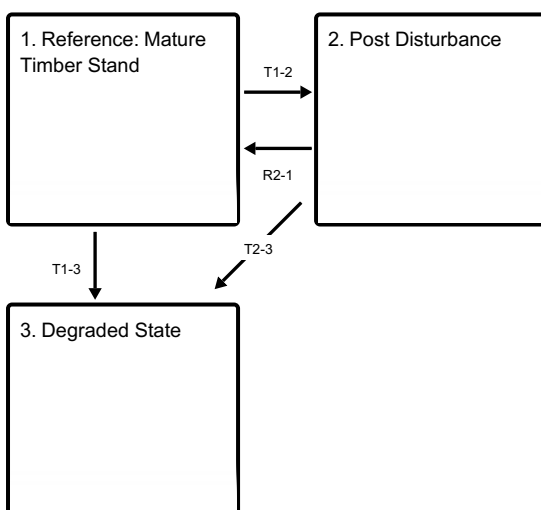
Parent material	(1) Colluvium (2) Slope alluvium–igneous, metamorphic and sedimentary rock (3) Residuum
Surface texture	(1) Bouldery, stony sandy loam (2) Clay loam (3) Loam (4) Silty clay loam
Drainage class	Moderately well drained to well drained
Permeability class	Slow to rapid
Soil depth	51–152 cm
Surface fragment cover <=3"	0–20%
Surface fragment cover >3"	0–15%
Calcium carbonate equivalent (Depth not specified)	0–5%
Electrical conductivity (Depth not specified)	0–2 mmhos/cm
Subsurface fragment volume <=3" (Depth not specified)	0–20%
Subsurface fragment volume >3" (Depth not specified)	0–15%

## Ecological dynamics

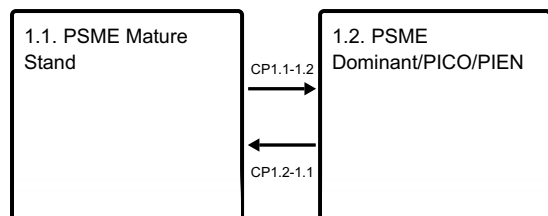
The cool extent of these deep soils tends to the more timber species and provides for greater diversity in under story as well. In capturing the transitions in the community phases, there is opportunity to debate whether a transition is between community phases or states. In considering the time required for regeneration and growth of the forests in this climate as well as the fire frequency and management responses, transitions between significant stages of forest growth will be considered as states within this ecological site. Fire is a major player in the natural cycle of this community; however, frequency, intensity and type of fire will influence the shifts within communities. Logging and other alternative land uses has had an impact in these transitions, and these shifts will be described briefly in the following state and transition model. For more information concerning the major forest community groupings in this class, refer to the Habitat type guides referenced below.

## State and transition model

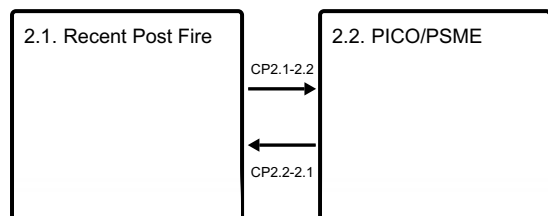
### Ecosystem states



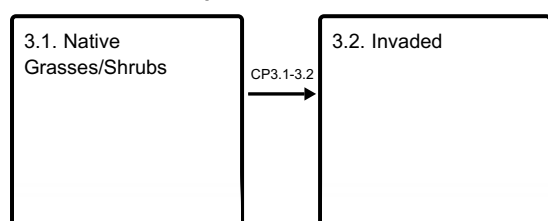
### State 1 submodel, plant communities



### State 2 submodel, plant communities



### State 3 submodel, plant communities



## State 1

### Reference: Mature Timber Stand

The Reference State is comprised of Douglas-fir as the dominant over story, with a mixed shrub under story. Scattered grasses, grass-likes, and forbs are included. As this state matures, or ages, the density of the Douglas-fir increases, the under story will decrease and will shift in composition. The diversity in the under story is a factor of latitude and longitude as well as the side of the continental divide it resides on.

**Characteristics and indicators.** The dominant over story cover is Douglas-fir with an intermixed composition of lodgepole pine and Englemann's spruce. In some isolated areas, especially along the upper extent of this state/habitat type populations of white bark pine can be found, especially within the Absaroka Mountain Range. The under story is comprised of a mix of shrub species and a few grasses and grass-likes - primarily pinegrass and Ross's sedge. Shrubs include Rocky mountain maple, huckleberry, ninebark, Spirea, Oregon grape, snowberry, whortleberry and others. Latitude, longitude and reference to the continental divide will influence the specific under story composition.

### Community 1.1

#### PSME Mature Stand

The Douglas-fir mature growth stand is comprised of almost entirely of Douglas-fir. The under story is limited due to the closed canopy, but in areas where thinning has occurred, there is a mix of shrubs and herbaceous cover. These stands provide little grazing or forage, but are excellent cover and habitat. Fallen timber and litter are fire hazards and restrict movement through the tree stands.

### Community 1.2

#### PSME Dominant/PICO/PIEN

This Mixed conifer stand is common in frequent low intensity stand replacing fires. Douglas-fir is the dominant species, with a composition of lodge pole pine as well as occurrences of Englemann spruce and white bark pine. The under story composition is variable, but is generally high in shrubs and forbs and only scatter grasses, however, canopy openness is the dictating factor for the under story in these communities.

### Pathway CP1.1-1.2

## **Community 1.1 to 1.2**

Low frequency stand replacing fires opens the canopy encouraging mixed conifer growth and under story rejuvenation.

### **Pathway CP1.2-1.1**

#### **Community 1.2 to 1.1**

Lack of fire or management leads to dense Douglas-fir timber stands, crowding out other conifers and reducing under story diversity.

## **State 2**

### **Post Disturbance**

Following higher intensity fire or higher frequency of fire, significant logging events, or other major disturbances to the reference community, a shift to State 2 - Post Disturbance, occurs. This state is comprised of community phases that move from a shrub dominant understory with only young sampling cover of lodgepole pine, to a lodgepole pine community. Further management is needed to shift this back to a reference state.

**Characteristics and indicators.** This State is characterized by the prominence of lodgepole pine and very few if any Douglas-fir. Some Englemann's spruce will be present, and as this stand matures, more Douglas-fir may establish. Fireweed, buckbrush, snowberry, chokecherry, and serviceberry become more prevalent in this community. A stronger herbaceous community will be present in the first community phase while the over story canopy is more open. But as the tree community matures, this will shift to a more shrubby woody dominated community.

## **Community 2.1**

### **Recent Post Fire**

This community is shrub dominated with saplings of young woody growth, generally lodge pole pine. The major shrubs in this community is buckbrush, snowberry, serviceberry, white spirea, and chokecherry. Areas of raspberry are also common. Fireweed is a major forb that will be prominent on the landscape. Geranium, lupine, chickweed, bedstraw, and a variety of other forbs will fill in the under story with some pinegrass, sedges, and fescues.

## **Community 2.2**

### **PICO/PSME**

Recovery following intense fires tends towards a lodge pole pine dominated community. Douglas-fir maintain under low intensity, and with time will recover after a more catastrophic fire, lodge pole pines can recover relatively quickly in low frequency of fires. As the lodge pole pine increase in size and density, the under story shifts to a more herbaceous cover with shrubs rather than the shrub dominated.

### **Pathway CP2.1-2.2**

#### **Community 2.1 to 2.2**

Lack of fire, or with no impact to timber growth, the natural succession or recovery process trends to a lodge pole pine timber stand.

### **Pathway CP2.2-2.1**

#### **Community 2.2 to 2.1**

Fire or timber management to open the canopy transitions a dense timber stand to a under story dominated community.

## **State 3**

### **Degraded State**

Following an intense fire, or fire followed by a sequence of severe weather, erosion is common. The loss of soil,

litter and conditions needed for vegetation recovery greatly reduces the ability for this site to recover, especially woody vegetation. These areas tend to establish as a grass and shrub dominated community and do not transition to a woody canopy without significant inputs (planting of woody vegetation) with surface scarification to allow competition of the woody species with the herbaceous under story.

**Characteristics and indicators.** This state's main characteristic is the lack of woody vegetation. The indicator that this is a degraded woody site compared to an open parkland site, is that there is generally evidence of the erosion, the disturbance that led to the event - charred debris, clear-cut stumps or logging evidence, blow-down or similar debris that remains in the area. A grass and shrub dominated state is what is found. Shrubs include White spirea, serviceberry, chokecherry, a variety of currants, wild rose, and others. Grasses include pinegrass, Idaho fescue, king spike fescue, and rough fescue on the west divide. Nodding brome and mountain brome grasses, as well as a variety of rhizomatous wheatgrasses. A wide variety of forbs are expected on this site, but species will vary depending on the what extent of the range is being evaluated (latitude, longitude).

### **Community 3.1**

#### **Native Grasses/Shrubs**

This community phase will have remnant signs of fire or logging that removed the woody vegetation, but the site is dominated by herbaceous species. This community can have a broad diversity of species and may vary greatly with use. However, for this ecological site, the main capture is the long-term loss of woody vegetation and the dominance of shrubs and grasses within these small patch dynamics in the forest habitat.

### **Community 3.2**

#### **Invaded**

Following major disturbances where seed sources are present, a flush of native and invader species is common, especially following fire fighting operations as well as logging activities. A variety of thistles, houndstongue, smooth brome, and other aggressive introduced species will dominate a site. Mullein, elkweed and other natives can become over abundant on these sites as well, but with time will decrease unlike the introduced invaders.

### **Pathway CP3.1-3.2**

#### **Community 3.1 to 3.2**

Seed transport by wildlife, especially migratory species, recreation and livestock can introduce a variety of aggressive weedy species that will dominate the site; especially in areas that are impacted by rodent activity, frost heave, heavy use areas by wildlife and livestock, and other surface disturbances.

### **Transition T1-2**

#### **State 1 to 2**

The recovery of a site following a high intensity fire removing the Douglas-fir over story lends to a lodge pole pine community.

### **Transition T1-3**

#### **State 1 to 3**

Fire followed by erosion removes the soil cover encouraging herbaceous growth that inhibits the establishment of woody vegetation back to these eroded sites.

### **Restoration pathway R2-1**

#### **State 2 to 1**

Given time and with timber management, Douglas-fir will recover and expand on the site. Low intensity fire patterns are needed to maintain and improve this community.

### **Transition T2-3**



## **State 2 to 3**

Extreme erosion following removes the soil cover encouraging herbaceous growth that inhibits the establishment of woody vegetation back to these eroded sites.

## **Additional community tables**

### **Animal community**

This site and plant community complex has minimal livestock grazing capacity in the old stand forests. In new growth or following logging or fire, this site does provide some livestock forage. This site is common habitat for elk, mule deer, bear, wolf, mountain lion, and a variety of other wildlife.

### **Hydrological functions**

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group C, with localized areas in hydrologic group B and D. Infiltration ranges from moderately slow to moderate. Runoff potential for this site varies from low to moderate depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to nonexistent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

### **Recreational uses**

This site provides hunting opportunities for large ungulates and fur bearing species. Limited for upland game bird species. Hiking is limited by density of mature tree stands, otherwise provides an excellent area to camp, hike, and recreate.

### **Wood products**

Timber harvest for lumber and firewood, as well as post and pole cuttings are common on this forest type. Christmas tree harvest occurs on lower extents of this forest type.

### **Other products**

Berry harvest from under story species as well as medicinal plants can be found within this ecological site. Fungi (mushroom) harvest can also occur in specific locations.

### **Other references**

Steele, Robert; Cooper, Stephen V.; Ondov, David M.; Roberts, David W.; Pfister, Robert D. 1983. Forest Habitat Types of Eastern Idaho-Western Wyoming. General Technical Report INT-144. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 122 p.

### **Contributors**

Bob Spokas  
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### **Approval**

Kirt Walstad, 9/07/2023

## 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.

Author(s)/participant(s)	
Contact for lead author	
Date	05/17/2024
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

### Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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

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5. **Number of gullies and erosion associated with gullies:**

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

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7. **Amount of litter movement (describe size and distance expected to travel):**

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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):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial**

distribution on infiltration and 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):**
- 

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:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
- 

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

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

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:**
- 

17. **Perennial plant reproductive capability:**
-