

Ecological site R010XA049ID

Gravelly Loam

12-16 PZ ARTRV-PUTR2/PSSPS

Last updated: 2/14/2025
Accessed: 09/15/2026

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): 010X–Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. These factors support plant communities with shrub-grass associations with considerable acreage of sagebrush grassland. Big sagebrush, bluebunch wheatgrass, and Idaho fescue are the dominant species. Stiff sagebrush, low sagebrush, and Sandberg bluegrass are often dominant on sites with shallow restrictive layers. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing with areas accessible by irrigation often used for irrigated agriculture. For further information, see "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin (U.S. Department of Agriculture Handbook 296, 2006)" available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624

Classification relationships

Artemisia vaseyana/ Agropyron spicatum ht. Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".

Ecological site concept

• Site occurs on uplands • Slopes generally less than 30%, occurring on all aspects • Site associated with recent lava flows • Soils with greater soil development than on Cinder 12-16. Increased fine soil particles within the profile.

Associated sites

R010XA048ID	Cindery South 12-16 PZ PUTR2-ARTRV/PSSPS Adjacent south aspects
R010XA050ID	Very Shallow Loam 12-16 PZ ARAR8/POSE Adjacent low slope areas with shallow soils
R010XA020ID	Mixed Shrub 12-16 PZ Adjacent low slope areas with shallow soils

R010XA047ID	Cindery North 12-16 PZ ARTRV-PUTR2/FEID-PSSPS Adjacent north aspects
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Similar sites

R010XA046ID	Cinder Garden 12-16 PZ EROVD-LERE7 Site nearly devoid of vegetation, soil with little development
R010XA044ID	Cinder 12-16 PZ PIFL2/ARTRV Soils with some development but still fewer fine particles

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> ssp. <i>vaseyana</i> (2) <i>Purshia tridentata</i>
Herbaceous	(1) <i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>

Physiographic features

This site occurs on nearly level to gently sloping hills and areas adjacent to cinder slopes and lava flows. Slopes predominantly range from 1 to 8 percent, but may go up to 30 percent. Elevation ranges from 5000 to 7000 feet (1500 to 2150 meters).

Table 2. Representative physiographic features

Landforms	(1) Foothills > Hill (2) Foothills > Lava flow
Flooding frequency	None
Ponding frequency	None
Elevation	1,520 – 2,130 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	Not specified
Slope	0 – 30 %

Climatic features

The Big and Little Wood River Foot slopes and Plains, proposed as MLRA 10X, has a mean elevation of 5310 feet above sea level, and varies from 3600 to 9235 feet. In general, average annual precipitation is greatest on the western side, with the southeast area being the driest. The average annual precipitation, based on 7 long term climate stations located throughout the MLRA, is 15.39 inches, with a range of 12.5 to 18 inches. Monthly precipitation is generally greatest at the end of the year, diminishes steadily until a low in July and August, then increases rapidly in the autumn.

Monthly temperatures can vary considerably. Highs of up to 102° and lows down to -52° Fahrenheit have been recorded. The average annual temperature is 42.9°. The frost-free period ranges from 75 to 98 days. The freeze-free period is a bit longer: 106 to 133 days.

Both morning and afternoon average relative humidity values peak in the winter, and reach their low in July and August. The average number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February.

Table 4 Representative climatic features

Frost-free period (characteristic range)	80-100 days
Freeze-free period (characteristic range)	110-130 days
Precipitation total (characteristic range)	310-410 mm
Frost-free period (average)	100 days
Freeze-free period (average)	130 days
Precipitation total (average)	380 mm

Influencing water features

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

Wetland description

This site is not influenced by adjacent wetlands.

Soil features

The soils are formed in volcanic cinders. They are gravelly or very gravelly loams and gravelly coarse sandy loams. The soils have over 35 percent coarse fragments throughout the profile. The subsoils are generally very gravelly. There are more fine soil particles in these soils than Cinder 12-16. The gravels throughout the profile are cinders. The water intake is rapid with well to excessive drainage.

Available water capacity is low to medium. Erosion hazard is low.

Soil Series Correlated to this Ecological Site

No data

Table 5. Representative soil features

Parent material	(1) Cinders – volcanic rock
Surface texture	(1) Gravelly loam (2) Very gravelly sandy loam
Drainage class	Well drained to excessively drained
Permeability class	Moderately rapid to rapid
Surface fragment cover <=3"	10 – 40 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	0 – 10.16 cm
Subsurface fragment volume <=3" (Depth not specified)	40 – 60 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

The dominant visual aspect of this site is bluebunch wheatgrass in the understory and mountain big sagebrush and antelope bitterbrush in the overstory. Composition by weight is approximately 50 percent grass, 20 percent forbs, and 20 percent shrubs.

During the last few thousand years, this site has evolved in a semi-arid climate characterized by dry summers and cold winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer, Rocky Mountain Elk, lagomorphs, and small rodents.

Fire has historically occurred on the site at intervals of 20 to 50 years.

The Reference State (State 1), previously referred to as the Historic Climax Plant Community (HCPC), 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.

FUNCTION:

This site is suited for big game and livestock as late spring, summer, and fall range. The site can be winter range for big game in moderate winters. It also provides some recreational use in the summer and fall in the form of hiking and hunting. Cross country skiing is also possible in the winter.

This site is susceptible to degradation due to the gentle slopes, ease of access and instability of the cinder gravelly surface textures. Infiltration is good where the community is in mid to late seral status. The site has moderately low runoff potential. Snow accumulates on the site due to high elevation and presence of tall shrubs.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, mountain big sagebrush and antelope bitterbrush can gradually increase on the site. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, antelope bitterbrush and mountain big sagebrush can displace most of the primary understory species.

When fires become more frequent than historic levels (20 to 50 years), mountain big sagebrush and antelope bitterbrush are reduced significantly. Rabbitbrush can increase slightly. With continued short fire frequency, mountain big sagebrush and antelope bitterbrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass and Letterman's needlegrass. These species may be replaced by Canby bluegrass and bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive plants. Cheatgrass will invade the site at lower elevations. These fine fuels will increase the fire frequency.

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 the bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, mountain big sagebrush and noxious and invasive plants will increase.

Continued improper grazing management influences fire frequency by increasing fine fuels. As cheatgrass increases and becomes co-dominant with other annuals, fires become more frequent, particularly at lower elevations.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This can lead to gradual increases in mountain big sagebrush. A planned grazing system can be developed to intentionally accumulate fine fuels in preparation for a prescribed burn. Any brush management should be carefully planned, as a reduction in shrubs or junipers without a suitable understory of desirable perennial bunchgrasses can result in an increase in cheatgrass and other annuals which will lead to more frequent fire intervals.

Weather influences:

Above normal precipitation in April, May, and June can dramatically increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to viable seed production. Overall plant composition is normally not affected when perennials have good vigor.

Below normal temperatures in the spring can have an adverse impact on total production regardless of precipitation. An early, hard freeze can occasionally kill some plants.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to a reduction in fire frequency.

Influence of Insects and disease:

Outbreaks can affect vegetation health. Bitterbrush can be severely affected by the western tent caterpillar (*Malacosoma fragilis*). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. Mormon cricket and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

Many of these species add to the fine-fuel component and lead to increased fire frequency.

Many of the perennial and annual invasive species compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game animals use this site in the spring, summer, and fall and in moderate winters. Their numbers are seldom high enough to adversely affect the plant community. Herbivory can be detrimental to bitterbrush when livestock grazing and browsing by big game occurs at the same time and season. This will occur when both kinds of animal are using the plant in the late summer or fall. The adverse impact is excessive use of the current year's leader growth. High numbers of burrowing rodents provide bare ground areas that allow invasion of weedy species. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

Watershed:

Decreased infiltration and increased runoff occur with an increase in mountain big sagebrush. Desired understory species can be reduced. This composition change can affect nutrient and water cycles. Increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long-term effect is a transition to a different state.

Practice Limitations:

Severe limitations exist on this site for seeding by conventional methods due to gravelly textured soils. There are slight limitations for brush control but practice should be carefully planned and applied to prevent cheatgrass invasion and dominance. There are slight limitations to implementing facilitating and vegetation management practices.

State and transition model

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 1.4 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Wildlife Interpretations. Animal Community – Wildlife Interpretations This rangeland ecological site provides diverse habitat for many native wildlife species. The plant community exhibits a diverse mixture of forbs throughout the growing season offering excellent habitat for invertebrates. Mule deer and elk are the large herbivores using the site. The site provides seasonal habitat for resident and migratory animals including western toad, sagebrush lizard, shrews, bats, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark and western meadowlark. Sagebrush obligate avian and mammal species including sage-grouse, Brewer's sparrow, sage thrasher and pika utilize these sites during the growing season for nesting and brood-rearing habitat. Sage-grouse an area sensitive species, may utilize the sagebrush plant community as winter habitat. This rangeland ecological site is commonly associated with pre-historic lava flows which provide unique cave habitats for several sensitive animal species, including the Blind Cave Leiodid Beetle, Cave Obligate Mite, Bats and Cave Obligate Harvestman. A change in the quality of the historic plant community over time can reduce the numbers and diversity of native wildlife species on this ecological site. Encroachment of invasive plant species (cheatgrass and bulbous bluegrass) in isolated areas 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 streams, artificial water catchments and springs. State 1 Phase 1.1 – Mountain Big Sagebrush/ Antelope Bitterbrush Bluebunch Wheatgrass/ Reference Plant Community (RPC) This plant community provides a diversity of grasses, forbs and shrubs, used throughout the growing season by native insect communities that assist in pollination. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, western toad, boreal chorus frog and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Development of spring sites that collect all available water would exclude amphibian use on these sites. Native shrub-steppe obligate avian species utilizing the habitat include the Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Sage-grouse may utilize this plant community for nesting, winter and brood rearing habitat. The plant community provides forage and cover for large mammals including mule deer and elk. A diverse small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize this community. Pikas may utilize the site if adjacent to rocky open areas. Habitat for the pygmy rabbit would be marginal due to gravelly soils and high elevation. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed. State 1 Phase 1.2 - Mountain Big Sagebrush/ Bluebunch Wheatgrass

Plant Community: This plant community is the result of improper grazing management and a lack of fire. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory. Antelope bitterbrush has decreased. The reduced herbaceous understory results in reduced diversity and numbers of insects. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink and western toad. The reduction of grasses and forbs in the plant community would reduce the available prey species and cover for the resident reptile species. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibian use on these sites. This plant community supports a less diverse variety of migratory and resident avian species. Fewer prey species and sparse understory cover results in less available food, brood-rearing and nesting habitat for birds. Key shrub-steppe avian obligates include Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Winter cover and winter food for sage-grouse is available. Reduced understory vegetation and increased sagebrush density reduces forage value for large mammals including mule deer and elk. A small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize these areas. Pikas may be present in areas with adjacent open rocky habitat. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

State 1 Phase 1.3 – Bluebunch Wheatgrass/ Canby Bluegrass Plant Community: This plant community is the result of wildfire. The plant community, dominated by herbaceous vegetation with little to no sagebrush or antelope bitterbrush would provide less vertical structure for animals. Patches of root sprouting shrubs (rabbitbrush) may be present to provide limited vertical structure for wildlife. Insect diversity would be reduced but a diverse native forb community, and increase in rabbitbrush would still support select pollinators throughout the growing season. The reptiles including short horned lizard and sagebrush lizard would be limited or excluded due to the loss of sagebrush. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibian use on these sites. The dominance of herbaceous vegetation with little sagebrush canopy cover would eliminate use of these areas as nesting habitat by Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides limited brood-rearing habitat for sage-grouse if suitable sagebrush cover is close by. Winter cover and winter food for sage-grouse is eliminated. The herbaceous vegetation improves habitat for grassland bird species (horned lark and western meadowlark). Large mammal (mule deer and elk) use would be seasonal and offer little thermal cover and young of year cover with the loss of shrub cover. The diversity and populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel.

State 1 Phase 1.4 – Antelope Bitterbrush/ Mountain Big Sagebrush Plant Community: This state has developed due to fire frequency being much longer than normal and no grazing. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory. Antelope bitterbrush has increased. The reduced herbaceous understory results in reduced diversity and numbers of insects. The reptile and amphibian community is similar to Phase 1.2. The reduction of grasses and forbs in the plant community would reduce the available prey species and cover for the resident reptile species. Amphibian habitat would be tied to permanent spring sites in the area. Development of spring sites that collect all available water would exclude amphibian use on these sites. Fewer prey species and sparse understory cover results in less available food, brood-rearing and nesting habitat for birds. Key shrub-steppe avian obligates include Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Winter cover and winter food for sage-grouse is available. Reduced understory vegetation and increased sagebrush density reduces forage value for large mammals including mule deer and elk. A small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots utilize these areas. The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

State 2 –Canby Bluegrass/ Cheatgrass / Annuals Plant Community: This plant community is the result of continued improper grazing management and frequent fire. The reduced forb and shrub component in the plant community would support a very limited population of pollinators. Most reptilian species identified in other phases are not supported with food, water or cover. This plant community does not support the habitat requirements for sage-grouse, sage thrasher, Brewer's sparrow or sage sparrow. Diversity of grassland avian species is reduced due to poor cover and available food. Birds of prey including hawks and falcons may range throughout these areas looking for prey species. Large mammals may utilize the herbaceous vegetation in the early part of the year when the Canby bluegrass and invasive annuals (cheatgrass) are more palatable. At other times of the year large mammals would not regularly utilize these areas due to poor food and cover conditions. The populations of small mammals would be dominated by open grassland species like the Columbian ground squirrel. Bats may be impacted by the loss of the native plant species and reduced populations and diversity of insects.

Grazing Interpretations. This site is suited for livestock grazing in late spring and fall months. Hoof action from livestock grazing can cause some soil displacement due to the unstable soil surface with cinder gravels. Prescribed grazing must take this into account. 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. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

Hydrological functions

No data.

Recreational uses

This site has some recreation value and natural beauty due to spring blooming forbs and shrubs. The site can be used for hunting, hiking, horseback riding, and cross country skiing in winters when there is adequate snow.

Wood products

None.

Other products

None.

Other information

Field Offices Mountain Home, ID Gooding, ID Fairfield, ID Shoshone, ID Rupert, ID Arco, 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 Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho Jim Cornwell, Range Management Specialist, IASCD Kristen May, Resource Soil Scientist, NRCS, Idaho Lee Brooks, Range Management Specialist, IASCD

Type locality

Location 1: Butte County, ID	
General legal description	NE of Craters of the Moon National Monument Headquarters.

References

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

Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".

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/feis

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

Dave Franzen

Approval

Kirt Walstad, 2/14/2025

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	06/24/2009
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** rills do not occur on this site.

2. **Presence of water flow patterns:** water-flow patterns do not occur on this site.

3. **Number and height of erosional pedestals or terracettes:** pedestals do not occur on this site. Terracettes do not occur in the traditional sense (caused by water movement), but can develop due to dry raveling or foot/hoof action. They are not extensive.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available. On sites in mid-seral status bare ground may range from 15-30 percent. Most of the area is either absent of plants or litter and has cinders.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** none due to gravelly surface.

7. Amount of litter movement (describe size and distance expected to travel): fine and coarse litter generally does not move. Gravels on the surface and shrub cover help reduce fine litter movement.

8. 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 but needs to be tested.

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): No data.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Infiltration is good regardless of plant cover due to cinder surface. Tall shrubs catch blowing snow in the interspaces.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): is not present.

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 deep-rooted perennial bunchgrasses

Sub-dominant: tall shrubs perennial forbs

Other: shallow rooted bunchgrasses

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): little decadence is expected in shrubs or grasses with normal fire cycle, but decadence can occur in the absence of fire longer than the normal fire frequency. Grass and forb mortality will occur as tall shrubs increase.

14. Average percent litter cover (%) and depth (in): additional litter cover data is needed but is expected to be 15-20 percent to a depth less than 0.1 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production): is 1100 pounds per acre (1232 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 60 percent of the total production, forbs 20 percent, shrubs 20 percent, and trees 5 percent.

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 bulbous bluegrass, rush skeletonweed, musk and scotch thistle, and diffuse and spotted knapweed. Cheatgrass can invade the site at the lower elevations.
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17. Perennial plant reproductive capability: all functional groups have the potential to reproduce in most years.
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