

## Ecological site R025XY007ID ASH 10-14

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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): 025X—Owyhee High Plateau

#### MLRA Notes 25—Owyhee High Plateau

This area is in Nevada (56 percent), Idaho (30 percent), Oregon (12 percent), and Utah (2 percent). It makes up about 27,443 square miles. MLRA 25 is characteristically cooler and wetter than the neighboring MLRAs of the Great Basin. The western boundary is marked by a gradual transition to the lower and warmer basins of MLRA 24. The boundary to the south-southeast, with MLRA 28B, is marked by gradual changes in geology marked by an increased dominance of singleleaf pinyon and Utah juniper and a reduced presence of Idaho fescue. The boundary to the north, with MLRA 11, is a rapid transition from the lava plateau topography to the lower elevation Snake River Plain.

#### Physiography:

All of this area lies within the Intermontane Plateaus. The southern half is in the Great Basin section of the Basin and Range province. This part of the MLRA is characterized by isolated, uplifted fault-block mountain ranges separated by narrow, aggraded desert plains. This geologically older terrain has been dissected by numerous streams draining to the Humboldt River.

The northern half of the area lies within the Columbia Plateaus province. This part of the MLRA forms the southern boundary of the extensive Columbia Plateau basalt flows. Most of the northern half is in the Payette section, but the northeast corner is in the Snake River Plain section. Deep, narrow canyons draining into the Snake River have been incised into this broad basalt plain. Elevation ranges from 3,000 to 7,550 feet on rolling plateaus and in gently sloping basins. It is more than 9,840 feet on some steep mountains. The Humboldt River crosses the southern half of this area

#### Geology:

The dominant rock types in this MLRA are volcanic. They include andesite, basalt, tuff, and rhyolite. In the north and west parts of the area, Cretaceous granitic rocks are exposed among Miocene volcanic rocks in mountains. A Mesozoic igneous and metamorphic rock complex dominates the south and east parts of the area. Upper and Lower Paleozoic calcareous sediments, including oceanic deposits, are exposed with limited extent in the mountains. Alluvial fan and basin fill sediments occur in the valleys.

#### Climate:

The average annual precipitation in most of this area is typically 11 to 22 inches. It increases to as much as 49 inches at the higher elevations. Rainfall occurs in spring and sporadically in summer. Precipitation occurs mainly as snow in winter. The precipitation is distributed fairly evenly throughout fall, winter, and spring. The amount of precipitation is lowest from midsummer to early autumn. The average annual temperature is 33 to 51 degrees F. The freeze-free period averages 130 days and ranges from 65 to 190 days, decreasing in length with elevation. It is typically less than 70 days in the mountains.

#### Water:

The supply of water from precipitation and streamflow is small and unreliable, except along the Owyhee, Bruneau, and Humboldt Rivers. Streamflow depends largely on accumulated snow in the mountains. Surface water from mountain runoff is generally of excellent quality and suitable for all uses. The basin fill sediments in the narrow alluvial valleys between the mountain ranges provide some ground water for irrigation. The alluvial deposits along the large streams have the most ground water. Based on measurements of water quality in similar deposits in

adjacent areas, the basin fill deposits probably contain moderately hard water. The water is suitable for almost all uses. The carbonate rocks in this area are considered aquifers, but they are little used. Springs are common along the edges of the limestone outcrops.

#### Soils:

The dominant soil orders in this MLRA are Aridisols and Mollisols. The soils in the area dominantly have a mesic or frigid temperature regime and an aridic, aridic bordering on xeric, or xeric moisture regime. Soils with aquic moisture regimes are limited to drainage or spring areas, where moisture originates or runs on and through. These soils are of a very limited extent throughout the MLRA. They generally are well drained, clayey or loamy, and shallow or moderately deep. Most of the soils formed in mixed parent material. Volcanic ash and loess mantle the landscape. Surface soil textures are loam and silt loam with ashy texture modifiers in some areas. Argillic horizons occur on the more stable landforms. They are exposed nearer the soil surface on convex landforms, where ash and loess deposits are more likely to erode. Soils that formed in carbonatic parent material in areas that receive less than 12 inches of precipitation are characterized by calcic horizons throughout the profile, while soils in areas that receive more than 12 inches of precipitation do not have calcic horizons in the upper part of the profile. Soils that formed on stable landforms at the lower elevations are dominated by ochric horizons. Soils that formed at the middle and upper elevations are characterized by mollic epipedons. Soils in drainage areas at all elevations that receive moisture running on or through them are characterized by thicker mollic epipedons.

#### Biological Resources:

This MLRA supports shrub-grass vegetation. Lower elevations are characterized by Wyoming big sagebrush associated with bluebunch wheatgrass, western wheatgrass, and Thurber's needlegrass. Other important plants include bluegrass, squirreltail, penstemon, phlox, milkvetch, lupine, Indian paintbrush, aster, and rabbitbrush. Black sagebrush occurs but is less extensive. Singleleaf pinyon and Utah juniper occur in limited areas. With increasing elevation and precipitation, vast areas characterized by mountain big sagebrush or low sagebrush/early sagebrush in association with Idaho fescue, bluebunch wheatgrass, needlegrasses, and bluegrass become common. Snowberry, curl-leaf mountain mahogany, ceanothus, and juniper also occur. Mountains at the highest elevations support whitebark pine, Douglas-fir, limber pine, Engelmann spruce, subalpine fir, aspen, and curl-leaf mountain mahogany.

Major wildlife species include mule deer, bighorn sheep, pronghorn, mountain lion, coyote, bobcat, badger, river otter, mink, weasel, golden eagle, red-tailed hawk, ferruginous hawk, Swainson's hawk, northern harrier, prairie falcon, kestrel, great horned owl, short-eared owl, long-eared owl, burrowing owl, pheasant, sage grouse, chukar, gray partridge, and California quail. Reptiles and amphibians include western racer, gopher snake, western rattlesnake, side-blotched lizard, western toad, and spotted frog. Fish species include bull, red band, and rainbow trout.

### Classification relationships

*Artemisia wyomingensis/ 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

This site is on terraces at elevations between 5400 feet and 5700 feet with slopes less than 12 percent and is independent of aspect.

The soils of this site shallow to welded ash, well drained with medium runoff. They are gravelly sandy loams with very low Available Water Capacity.

The site supports a Wyoming big sagebrush and perennial bunchgrass with an annual production between 650 and 900 lbs/ac.

### Associated sites

R025XY006ID	<b>SOUTH SLOPE STONY 10-13</b>
R025XY019ID	<b>LOAMY 10-13</b>
R025XY020ID	<b>LOAMY 7-10</b>
R025XY044ID	<b>VERY SHALLOW STONY LOAM 10-14</b>

## Similar sites

R025XY019ID	<b>LOAMY 10-13</b>
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**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata subsp. wyomingensis</i>
Herbaceous	(1) <i>Pseudoroegneria spicata subsp. spicata</i> (2) <i>Hesperostipa comata</i>

## Physiographic features

This site is in nearly level to rolling slopes that are usually less than 12 percent. The site is on all aspects. Elevation varies from 5400-5700 feet (1646-1737 meters). These sites are associated with upland positions on terraces and terrace side slopes.

**Table 2. Representative physiographic features**

Landforms	(1) Terrace
Runoff class	Medium to very high
Flooding frequency	None
Ponding frequency	None
Elevation	5,400–5,700 ft
Slope	2–12%
Water table depth	60 in
Aspect	Aspect is not a significant factor

## Climatic features

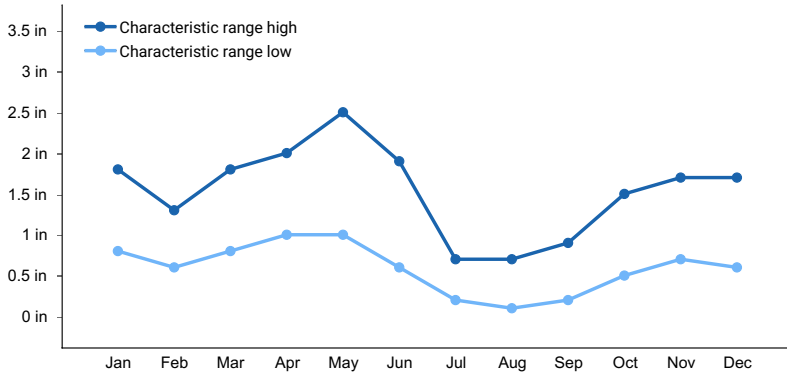
In MLRA 25 summers are hot, especially at lower elevations, and winters are cold and snowy. Precipitation is usually lighter at lower elevations throughout the year. At higher elevations precipitation is much greater, and snow accumulates to a considerable depth. The average total precipitation is 14.39 inches (based on 6 long term climate stations located throughout the MLRA).

The mean annual precipitation for the site is typically 10 inches to 13 inches (based on data populated in NASIS). The mean annual temperature is 45.9 degrees F. The average high is 59.7 degrees F and the average low temperature is 32.1 degrees F. The prevailing wind is from the west. Average wind speed is greatest, at about 10 miles per hour, in March.

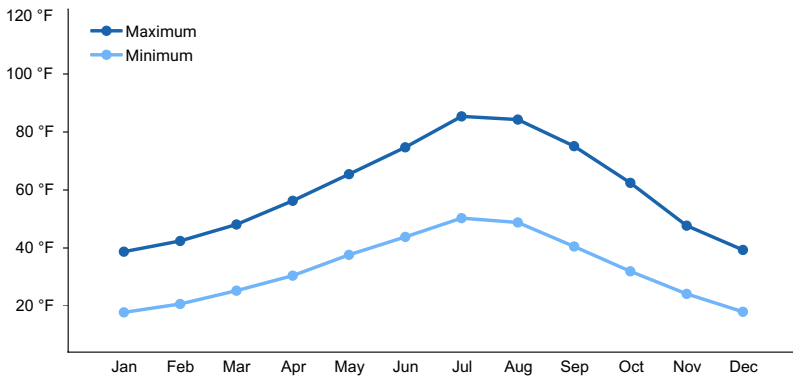
The frost-free period ranges from 79 to 103 days and the freeze free period ranges from 114 to 140 days.

**Table 3. Representative climatic features**

Frost-free period (characteristic range)	79-110 days
Freeze-free period (characteristic range)	114-140 days
Precipitation total (characteristic range)	10-13 in
Frost-free period (average)	103 days
Freeze-free period (average)	125 days
Precipitation total (average)	12 in



**Figure 1. Monthly precipitation range**



**Figure 2. Monthly average minimum and maximum temperature**

## Influencing water features

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

## Soil features

The soils supporting this site are shallow, well drained, with moderately slow permeability above bedrock. Runoff is medium. The erosion hazard is moderate by water, moderate by wind. The available water holding capacity (AWC) is very low. These soils are 10 to 20 inches (25 to 50 cm) deep. The soils are shallow to welded ash. The welded ash is fractured and platy and is not restrictive. The surface texture is sandy loam with gravels. The subsoil is usually moderately well developed with approximately 25 percent clay. This allows the roots of plants such as Wyoming big sagebrush to work into the substratum. Soil temperature regime is mesic.

### Soil Series Correlated to this Ecological Site

Weash

**Table 4. Representative soil features**

Parent material	(1) Eolian deposits–volcanic breccia (2) Residuum
Surface texture	(1) Gravelly sandy loam
Drainage class	Well drained
Permeability class	Moderately slow
Depth to restrictive layer	10–20 in
Soil depth	10–20 in

Surface fragment cover <=3"	0–14%
Surface fragment cover >3"	11–23%
Available water capacity (0-20in)	1.4–2 in
Calcium carbonate equivalent (0-20in)	0%
Electrical conductivity (0-20in)	0–2 mmhos/cm
Sodium adsorption ratio (0-20in)	0–5
Soil reaction (1:1 water) (0-20in)	6.6–7.8
Subsurface fragment volume <=3" (Depth not specified)	0–3%
Subsurface fragment volume >3" (Depth not specified)	0–3%

## Ecological dynamics

The dominant visual aspect of this site is Wyoming big sagebrush and bluebunch wheatgrass and needle and thread. Thurber's needlegrass, Sandberg bluegrass, bottlebrush squirreltail are subdominant in the stand along with a variety of forbs and small amounts of other shrubs. Composition by weight is approximately 55-65 percent grass, 5-10 percent forbs and 25-35 percent shrubs.

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

Fire has historically occurred on the site at intervals of 60-80 years.

The Historic Climax Plant Community (HCPC), 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 A. This plant community is dominated by Wyoming big sagebrush and bluebunch wheatgrass and needle and thread. Subdominant species include Sandberg bluegrass, bottlebrush squirreltail, Indian ricegrass, Thurber's needlegrass, phlox, lupine, and arrowleaf balsamroot. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

Total annual production is 750 pounds per acre (840 kilograms per hectare) in a normal year. Production in a favorable year is 900 pounds per acre (1008 kilograms per hectare). Production in an unfavorable year is 650 pounds per acre (728 kilograms per hectare). Structurally, cool season deep-rooted perennial bunchgrasses are dominant, followed by shrubs that are more dominant than perennial forbs followed by shallow rooted bunchgrasses.

### FUNCTION:

This site is well suited for livestock in spring and fall. It is used by big game in spring, fall, and winter. If water is available, the site is easily grazed by livestock due to gentle slopes.

This site has limited value for recreation.

Due to the low rainfall, low available water holding capacity (AWC), and relatively flat slopes, this site is easily degraded by improper grazing management or frequent fires.

Infiltration can be good with a mixed stand of shrubs and perennial grasses. Runoff is medium and erosion hazard is slight to moderate. Snow is caught in the shrub interspaces and a mixed stand of shrubs and perennial grasses is necessary to reach the potential of the site.

Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, shrubs can gradually increase. Grasses and forbs decrease as shrubs increase.

When fires become more frequent than historic levels (60-80 years), Wyoming big sagebrush is reduced significantly. With continued short fire frequency, Wyoming big sagebrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass and needle and thread. Subdominant species include bottlebrush squirreltail, Thurber's needlegrass and Indian ricegrass. These species may be replaced by cheatgrass along with a variety of annual and perennial forbs including invasive species. Sandberg bluegrass usually is 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 the bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in Wyoming big sagebrush and noxious and invasive plants.

Continued improper grazing management influences fire frequency by increasing fine fuels. If cheatgrass increases due to improper grazing management and becomes co-dominant with Sandberg bluegrass and other annuals, fires become more frequent.

Proper grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thereby reducing fire frequency. This reduction can lead to gradual increases in Wyoming big sagebrush. A planned grazing system can also 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 can increase cheatgrass which will lead to more frequent fire intervals.

Weather influences:

Above normal precipitation in late March, 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 the 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 reduction in fire frequency.

Influence of Insects and disease:

Outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather. Two or more consecutive years may cause mortality of some species. The sagebrush defoliator moth (*Aroga websterii*) causes mortality in relatively small patches. It seldom kills the entire stand. 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.

Annual weeds 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, fall, and winter. Their numbers are seldom high enough to adversely affect the plant community.

Watershed:

Decreased infiltration and increased runoff occur on slopes greater than 10 percent when Wyoming big sagebrush is removed with frequent fires, particularly the year following the fire event. The increased runoff also causes sheet and rill erosion. The long-term effect is a transition to a different state.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

1.1a Plant Community Phase 1.1 to 1.2 Develops in the absence of fire and improper grazing management.

1.1b Plant Community Phase 1.1 to 1.3. Develops with fire.

1.2a Plant Community Phase 1.2 to 1.1. Develops with prescribed grazing and no fire.

1.3a Plant Community Phase 1.3 to 1.1. Develops with prescribed grazing and no fire.

State 1 Plant Community Phase 1.2 to State 2. T1A. Develops through frequent fire with or without prescribed grazing management. This state has crossed the threshold. It is uneconomical to return it State 1 with accelerated practices.

State 1 Plant Community Phase 1.3 to State 2. T1B. Develops through frequent fire with or without prescribed grazing management. This state has crossed the threshold. It is uneconomical to return to State 1 with accelerated practices

State 2 to State 3. Results from range seeding.

State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to retrogress to a new site with reduced potential. It has crossed the threshold. It is economically impractical to return this site to State 1 with accelerated practices.

Practice Limitations:

No physical limitations exist for seeding on this site. Due to coarse textured soils and low available water holding capacity (AWC), a moderate chance of seeding failure exists during unfavorable moisture years. There are no physical limitations that exist for brush management on this site. Planning should carefully analyze the stand of perennial grasses and forbs, because removal of Wyoming big sagebrush can result in a significant increase in cheatgrass. If the plant community becomes dominated with cheatgrass, increased fire frequency could irreversibly degrade the community.

**State and transition model**

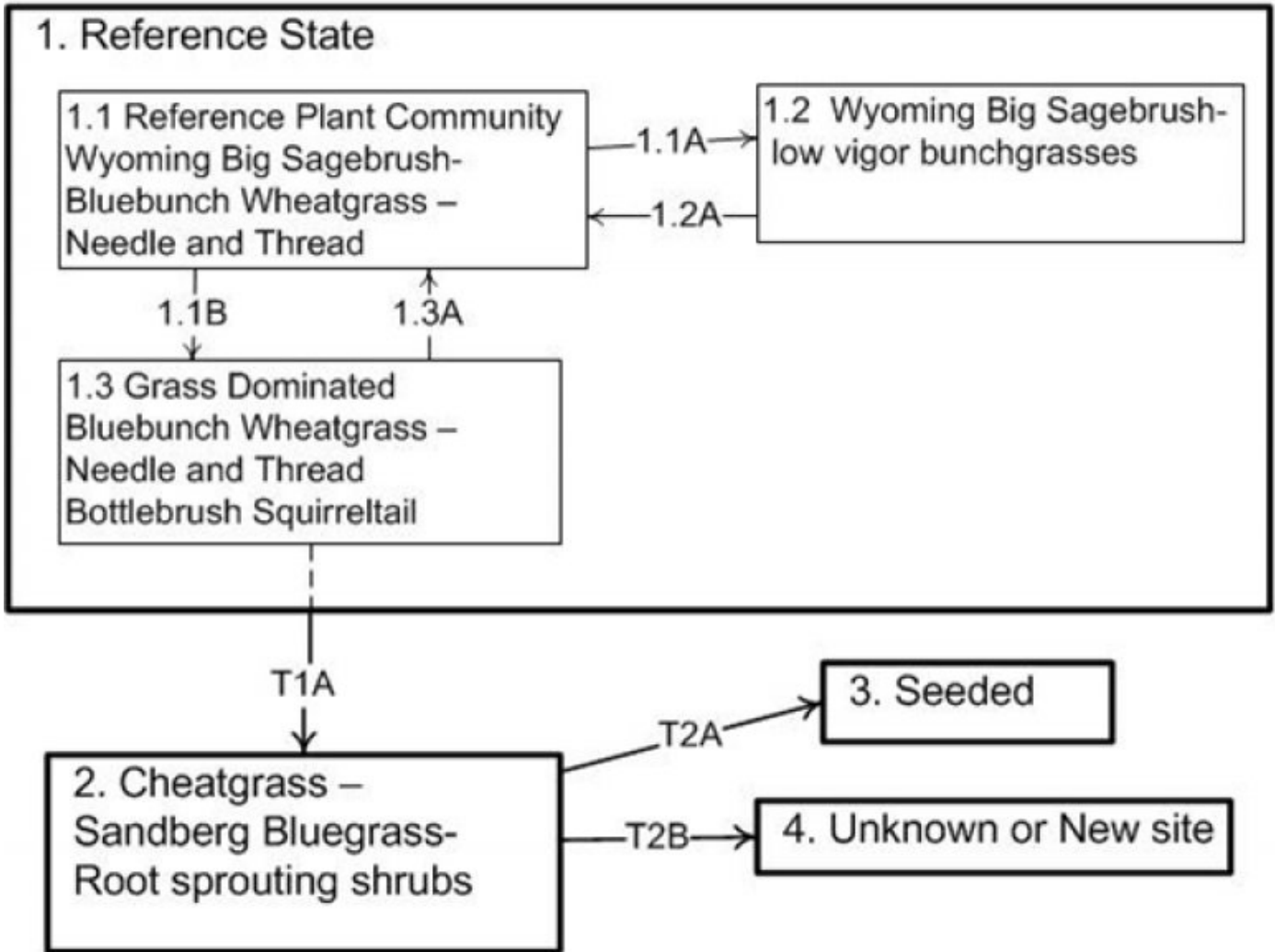


Figure 3. 25x-07

**State 1  
Reference State**

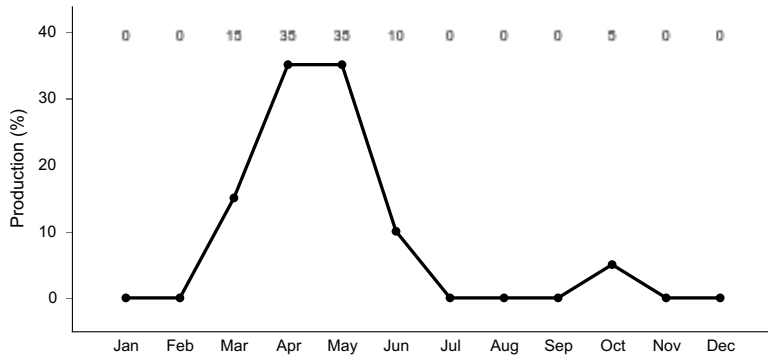
**Community 1.1  
Reference Plant Community**

Reference Plant Community Phase. This plant community has Wyoming big sagebrush in the overstory with bluebunch wheatgrass and needle and thread dominating the understory. Thurber’s needlegrass and Sandberg bluegrass are sub-dominant species. Other significant species in the plant community are bottlebrush squirreltail, Indian ricegrass, phlox, lupine and arrowleaf balsamroot. Other shrubs may include dwarf green rabbitbrush, antelope bitterbrush and buckwheats. Natural fire frequency is 60-80 years.

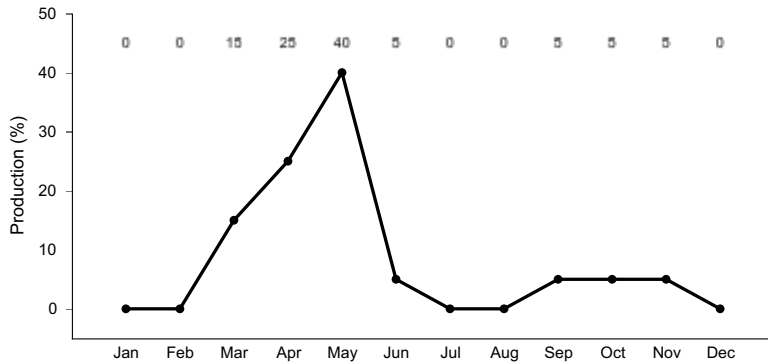
Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	400	460	555
Shrub/Vine	200	230	270
Forb	50	60	75
<b>Total</b>	<b>650</b>	<b>750</b>	<b>900</b>





**Figure 5. Plant community growth curve (percent production by month). ID0907, ARTRW8/PSSPS LOW PRECIP..**



**Figure 6. Plant community growth curve (percent production by month). ID0911, D25 POSE/BRTE/ANNUALS.**

## Community 1.2 Wyoming Big Sagebrush - Low Vigor Bunchgrasses

Plant Community Phase 1.2. This plant community is dominated by Wyoming big sagebrush with Sandberg bluegrass in the understory. This phase has developed due to improper grazing management and lack of fire. There is a reduced amount of bluebunch wheatgrass, needle and thread, Indian ricegrass, Thurber's needlegrass, and bottlebrush squirreltail. These deep-rooted bunchgrasses are typically in low vigor.

## Community 1.3 Grass Dominated - post fire

Plant Community Phase 1.3. This plant community is dominated by bluebunch wheatgrass, needle and thread and Thurber's needlegrass, although some needlegrass can be lost due to fire. Sandberg bluegrass is sub-dominant. Some Indian ricegrass may be present. Bottlebrush squirreltail may increase. Forbs remain about in the same proportion as Phase 1.1. Very little Wyoming sagebrush is present due to wildfire, but some rabbitbrushes and horsebrush are present due to root sprouting. This plant community is the result of wildfire.

### Pathway P1.1a Community 1.1 to 1.2

Develops in the absence of fire and improper grazing management.

### Pathway P1.1b Community 1.1 to 1.3

Develops with fire.

### Pathway P2.1a Community 1.2 to 1.1

Develops with prescribed grazing and no fire.

**Pathway P1.3a**  
**Community 1.3 to 1.1**

Develops with prescribed grazing and no fire.

**State 2**  
**Annual Invaded**

**Community 2.1**  
**Cheatgrass - Sandberg Bluegrass**

This plant community is dominated by Sandberg bluegrass, cheatgrass and other annuals. Root sprouting shrubs such as rabbitbrushes and horsebrush can be present, dependent upon how frequent fire has occurred. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices. This state has developed due to frequent fires and improper grazing management.

**State 3**  
**Range Seeding**

**Community 3.1**  
**Seeded**

The seeding may be an introduced species or it may be made up of native species that attempt to mimic State 1.

**State 4**  
**Unknown new site**

**Community 4.1**  
**Unknown new site**

This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires. It is economically impractical to return this site to State 1 with accelerated practices.

**Transition T1A**  
**State 1 to 2**

Develops through frequent fire with or without prescribed grazing management. This state has crossed the threshold. It is uneconomical to return it State 1 with accelerated practices.

**Transition T2A**  
**State 2 to 3**

Results from range seeding.

**Transition T2B**  
**State 2 to 4**

Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and/or frequent fire cause this state to regress to a new site with reduced potential. It has crossed the threshold. It is economically impractical to return this site to State 1 with accelerated practices.

## Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1				400–555	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	160–225	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	160–225	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	50–70	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	50–70	–
	thickspike wheatgrass	ELLA3	<i>Elymus lanceolatus</i>	0–70	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	25–35	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	25–35	–
<b>Forb</b>					
2				50–75	
	lupine	LUPIN	<i>Lupinus</i>	25–35	–
	spiny phlox	PHHO	<i>Phlox hoodii</i>	25–35	–
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	20–30	–
	beardtongue	PENST	<i>Penstemon</i>	10–15	–
	foothill deathcamas	ZIPA2	<i>Zigadenus paniculatus</i>	0–5	–
	little larkspur	DEBI	<i>Delphinium bicolor</i>	0–5	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–5	–
	desert madwort	ALDE	<i>Alyssum desertorum</i>	0–5	–
	desert rockcress	ARLI	<i>Arabis lignifera</i>	0–5	–
	Hooker's balsamroot	BAHO	<i>Balsamorhiza hookeri</i>	0–5	–
<b>Shrub/Vine</b>					
3				200–270	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	130–180	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	35–50	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	1–20	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	15–20	–
	buckwheat	ERIOG	<i>Eriogonum</i>	15–20	–
	plains pricklypear	OPPO	<i>Opuntia polyacantha</i>	1–15	–
	spineless horsebrush	TECA2	<i>Tetradymia canescens</i>	1–10	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	0–10	–

## Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This rangeland ecological site provides diverse habitat for many native wildlife species. Large herbivore use of this ecological site is dominated by mule deer and occasionally pronghorn antelope. Important seasonal habitat is provided for resident and migratory animals including western toad, common sagebrush lizard, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Encroachment of noxious and invasive plant species (cheatgrass,

bulbous bluegrass, Russian thistle) can replace native plant species which provide critical feed, brood-rearing, and nesting cover for a variety of native wildlife. Area sensitive species include greater sage-grouse, Brewer's sparrow, sage thrasher, sage sparrow, and Merriam's shrew. Water features are sparse provided by seasonal streams, artificial water catchments, and springs.

**State 1 Phase 1.1 - Wyoming Big Sagebrush/ Bluebunch Wheatgrass/ Needle and Thread Reference Plant Community (RPC):** This plant community provides a diversity of grasses, forbs, and shrubs used by native insect communities that assist in pollination. The reptile and amphibian community is represented by common sagebrush lizard, western rattlesnake, 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 these sites by amphibians. Native shrub-steppe obligate avian species include the Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Habitat (brood-rearing and winter cover) for sage-grouse is provided by this diverse plant community. The plant community supports the seasonal needs of large mammals (mule deer and antelope) providing food and cover. Antelope bitterbrush and bluebunch wheatgrass are desirable forage for large mammals. A diverse small mammal population including golden-mantled ground squirrels, Merriam's shrew, bushy-tailed woodrat, jackrabbit, and yellow-bellied marmots may utilize this plant community.

**State 1 Phase 1.2 - Wyoming Big Sagebrush/ Sandberg Bluegrass/ Bottlebrush Squirreltail 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. Grasses, forbs, and shrubs are used by native insects that assist in pollination but the reduced herbaceous understory results in lower diversity and numbers of insects. The reduced diversity and populations of insects may reduce reptile diversity and populations. Reduced herbaceous understory vegetation is a key factor in limiting the use of this plant community by ground nesting avian species. Shrub-steppe obligate bird species include Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. Habitat (brood-rearing) quality for sage grouse would decline due to a less diverse herbaceous plant community. Winter habitat would be provided for sage-grouse. The quality of forage for mule deer would decline due to the reduced vigor and production of deep rooted perennial grasses and forbs. A small mammal population including golden-mantled ground squirrels, Merriam's shrew, bushy-tailed woodrat, jackrabbit, and yellow-bellied marmots may utilize this plant community.

**State 1 Phase 1.3 - Bluebunch Wheatgrass/ Sandberg Bluegrass/ Bottlebrush Squirreltail Plant Community:** This plant community is the result of wildfire. The plant community, dominated by herbaceous vegetation with little or no sagebrush provides less vertical structure and limits use by shrub obligate animals. Insect diversity would be reduced, but a native forb community similar to that in Phase 1.1 would still support select pollinators. The quality of habitat for the common sagebrush lizard and western rattlesnake would decline due to the absence of sagebrush. The dominance of herbaceous vegetation with little sagebrush canopy cover would prevent use of these areas for nesting by Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides brood-rearing habitat for sage-grouse if sagebrush cover is nearby. The herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Forage for mule deer would be seasonal (spring, summer, and fall). Habitat quality for pronghorn may increase due to the open landscape. Small mammal diversity may be reduced due to an increase in hunting success by predators. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for shrub-steppe obligate animal species.

**State 2 - Sandberg Bluegrass/ Cheatgrass and Annual Plant Community:** This plant community is the result of continued improper grazing management and frequent fire. The loss of the native shrub and herbaceous plant community would not support a diverse insect community for all seasons. If rabbitbrush has a chance to sprout, late season pollinator habitat would be provided. Most native reptilian species are not supported with food 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 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 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. Habitat quality (food and cover) for native small mammals would decline due to the loss of the native herbaceous and woody plant community. Large blocks of this plant community would fragment the reference plant community and reduce the quality of the habitat for shrub-steppe obligate animal species.

**State 3 – Rangeland Seeding Plant Community:** The seeding mixture (native or non-native) determines the animal

species that would utilize this site. A diverse seed mixture of grasses and forbs would provide similar habitat conditions as in the herbaceous plant community described in State 1 Phase 1.3. A diverse seed mixture of grasses, forbs, and shrubs would provide similar habitat conditions as described in State 1 Phase 1.1 or 1.2. A monoculture of non-native grass species would not support diverse populations of insects, reptiles, birds, mammals, or shrub-steppe obligate animal species. Grassland animal species including western meadowlark, horned lark, savannah sparrow, deer mouse, mule deer, and elk would utilize this site for nesting and/or foraging. Birds of prey including hawks and falcons may range throughout this community looking for prey species. Large areas of State 3 with no shrubs in the plant community would fragment the reference plant community and would reduce the quality of the habitat for shrub-steppe obligate animal species.

#### Grazing Interpretations.

This site is well suited for livestock in spring and fall. If water is available, the site is easily grazed by livestock due to gentle slopes.

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

The soils in this site are in hydrologic group C. When hydrologic conditions of the vegetation cover is good, natural erosion hazard is slight to moderate.

### Recreational uses

This site provides habitat for big game and upland wildlife. This site provides only fair recreational opportunities through sightseeing and some hunting of big game and upland birds.

### Wood products

None.

### Other products

None.

### 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

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Jim Cornwell, Range Management Specialist, IASCD

Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho

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Lee Brooks, Range Management Specialist, IASCD

### Type locality

Location 1: Idaho County, ID	
General legal description	Basin north of Jackpot, Nevada.

### 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.

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USDI Bureau of Land Management, U S 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 And Jacy Gibbs

## Approval

Kendra Moseley, 4/24/2024

## 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)	
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Date	07/03/2007
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

- 1. Number and extent of rills:** Rills rarely occur on this site. If rills are present, they are likely to occur on slopes over 10 percent and immediately following wildfire.

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- 2. Presence of water flow patterns:** Water-flow patterns rarely occur on this site except on slopes greater than 10 percent. They occur as short and disrupted flows. They are disrupted by cool season grasses and tall shrubs and are not extensive.

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- 3. Number and height of erosional pedestals or terracettes:** Pedestals and/or terracettes are rare on this site. Where flow patterns and/or rills are present, few pedestals may be expected but are limited due to sandy or gravelly loam

surface textures.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** On sites in mid-seral status, bare ground may range from 35-45 percent.
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5. **Number of gullies and erosion associated with gullies:** None.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Blowouts and deposition areas are usually not present. Immediately following wildfire, some soil movement may occur on lighter textured soils. Where sagebrush has repopulated the site after a fire, remnants of past wind scour may be present.
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7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter in the interspaces may move up to 3 feet following a significant run-off event. Coarse litter generally does not move.
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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):** values should range from 3 to 4.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** The surface horizon is typically 2 inches thick. Structure typically includes strong coarse platy. Soil organic matter (SOM) ranges from 2 to 4 percent.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Bunchgrasses, especially deep-rooted perennials, slow run-off and increase infiltration. Tall shrubs can catch snow in the interspaces.
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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):** Compaction layer is 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 deep-rooted perennial bunchgrasses
- Sub-dominant: Tall shrubs> perennial forbs >shallow rooted grasses
- Other:
- Additional:
-

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Wyoming big sagebrush will become decadent in the absence of normal fire frequency. Grass and forb mortality will occur as tall shrubs increase.
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14. **Average percent litter cover (%) and depth ( in):** Additional litter cover data is needed but is expected to be 5-20 percent to a depth of 0.1 inches. Under mature shrubs, litter is <0.5 inches deep and is 90-100 percent ground cover.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production is 750 pounds per acre (840kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 55-65 percent of the total production, forbs 5-10 percent and shrubs 25-35 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:** Invasive plants include cheatgrass, *Vulpia* sp., annual mustards, bulbous bluegrass, Russian thistle and annual Kochia.
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17. **Perennial plant reproductive capability:** All functional groups have the potential to reproduce in favorable years.
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