

## Ecological site R010XA022ID Sandy Loam 12-16 PZ

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### General information

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

### 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](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624)

### Classification relationships

*Artemisia tridentata*/ *Agropyron spicatum* ht. Hironaka, M., in 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
- Soils are greater than 20" deep
- Site not associated with recent lava flows
- Soils are sandy

### Associated sites

R010XA037ID	<b>Shrubby Stony North 12-16 PZ ARTRV/FEID</b> Adjacent north slopes with stony soils
R010XA009ID	<b>South Slope Gravelly 12-16 PZ</b> Adjacent south slopes

R010XA031ID	<b>Bouldery Loam 12-16 PZ ARTRV/FEID</b> Adjacent low slope areas with bouldery soils
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### Similar sites

R010XA033ID	<b>Loamy 11-13 PZ ARTRX/PSSPS</b> Loamy rather than sandy soils
R010XA023ID	<b>Loamy 12-16 PZ ARTR4/FEID</b> Loamy rather than sandy soils
R010XA026ID	<b>Loamy 11-13 PZ ARTRW8/PSSPS</b> Loamy rather than sandy soils

**Table 1. Dominant plant species**

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

### Physiographic features

This site occurs on basalt plains, rolling foothills, fans, and terraces. It occurs on all aspects. Slopes vary from 2 to 20 percent. Elevation ranges from 4000 to 5500 feet (1212 to 1667 meters).

**Table 2. Representative physiographic features**

Landforms	(1) Plateau > Plain (2) Foothills > Hill (3) Foothills > Terrace
Flooding frequency	None
Ponding frequency	None
Elevation	4,000–5,500 ft
Slope	2–20%
Water table depth	80 in
Aspect	Aspect is not a significant factor

### Climatic features

The Big and Little Wood River Foothills and Plains, proposed as MLRA 10A, 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 3. Representative climatic features**

Frost-free period (characteristic range)	75-98 days
Freeze-free period (characteristic range)	106-133 days

Precipitation total (characteristic range)	12-16 in
Frost-free period (actual range)	
Freeze-free period (actual range)	
Precipitation total (actual range)	12-18 in
Frost-free period (average)	86 days
Freeze-free period (average)	120 days
Precipitation total (average)	15 in

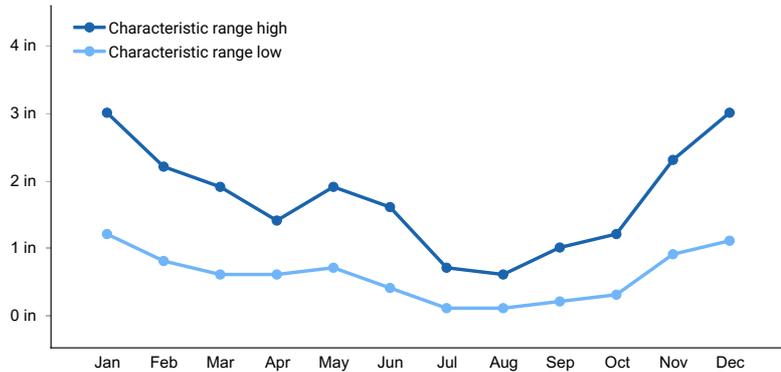


Figure 1. Monthly precipitation range

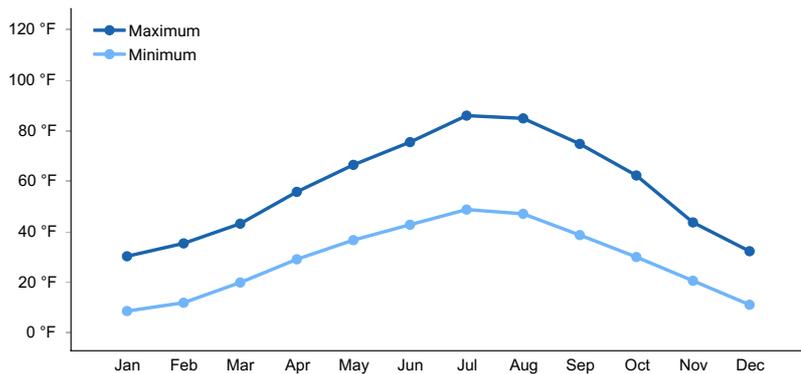


Figure 2. Monthly average minimum and maximum temperature

## 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 sandy loams, loams and very gravelly loams over 40 inches deep. There are usually no restrictions to water and root penetration. The available water holding capacity (AWC) is high. The erosion hazard is high when the vegetation cover is depleted. The soils are well to somewhat excessively drained and have moderately permeable subsoils.

Table 4. Representative soil features

Parent material	(1) Alluvium–basalt (2) Loess–siltstone
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Surface texture	(1) Gravelly sandy loam (2) Very cobbly loam (3) Very stony silt loam
Family particle size	(1) Sandy-skeletal (2) Loamy-skeletal
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderately slow to moderately rapid
Soil depth	40–60 in
Surface fragment cover ≤3"	0–35%
Surface fragment cover >3"	0–30%
Available water capacity (0-40in)	1.2–7.7 in
Calcium carbonate equivalent (0-40in)	0–5%
Soil reaction (1:1 water) (0-40in)	6.1–8.2
Subsurface fragment volume ≤3" (4-60in)	0–25%
Subsurface fragment volume >3" (4-60in)	0–35%

## Ecological dynamics

Ecological Dynamics of the Site:

The dominant visual aspect of this site is basin big sagebrush with bluebunch wheatgrass and basin wildrye. Composition by weight is approximately 45 to 55 percent grasses, 10 to 20 percent forbs and 25 to 35 percent shrubs.

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

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

The Reference State, 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 well suited for big game in the late spring, summer, and fall. It is also well suited for livestock and recreation use in the late spring, summer, and fall.

Due to the relatively gentle slopes, ease of livestock movement and access, this site can be easily degraded by improper grazing management if livestock water is available nearby. The site may be a key grazing area in the pasture.

Due to the gentle topography, infiltration is normally high and runoff low. Runoff, when it does occur is non-erosive except during high intensity convection storms. 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, basin big sagebrush and antelope bitterbrush increase. Grasses and forbs decrease as shrubs increase.

When fires become more frequent than historic levels (20 to 50 years), basin big sagebrush and bitterbrush are reduced significantly. With continued short fire frequency, big sagebrush and antelope bitterbrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass and Thurber's needlegrass. These species may be replaced by cheatgrass, medusahead, and bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive species. These fine fuels will increase the fire frequency. Root sprouting shrubs such as rabbitbrush may increase.

#### 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 reducing vigor of the bunchgrasses and possibly bitterbrush. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in basin big sagebrush and noxious and invasive plants.

Continued improper grazing management influences fire frequency by increasing fine fuels. If cheatgrass and/or medusahead increase along with other annuals due to improper grazing management, 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 can lead to gradual increases in basin 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 without a suitable understory of perennial grasses, can increase cheatgrass and/or medusahead which can 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, particularly bitterbrush with western tent caterpillars (*Malacosoma fragilis*). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. An outbreak of a particular insect is usually influenced by weather but no specific data for this site is available. 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 annual and perennial invasive species with deep root systems 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 late spring, summer, and fall. 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 years' leader growth.

The deer mouse is beneficial to this site as it is the principal vector for planting bitterbrush seed.

### Watershed:

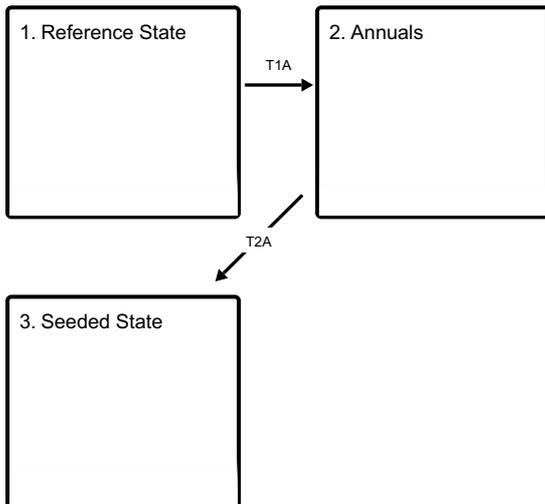
Decreased infiltration and increased runoff occur with the increase in mountain big sagebrush. Desired understory species can be reduced. The increased runoff also causes sheet and rill erosion. This composition change can affect nutrient and water cycles. Abnormally short fire frequency also gives the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

### Practice Limitations:

Only slight limitations exist on this site for implementing vegetative management practices. Usually this site is a key area for livestock management due to flatter slopes and non-stony soils. This site is suited to seeding if needed. Mechanical, chemical, and fire are satisfactory methods of brush management on this site. Slight to moderate limitations exist on this site for implementing facilitating practices such as water developments, salting, and fencing.

## State and transition model

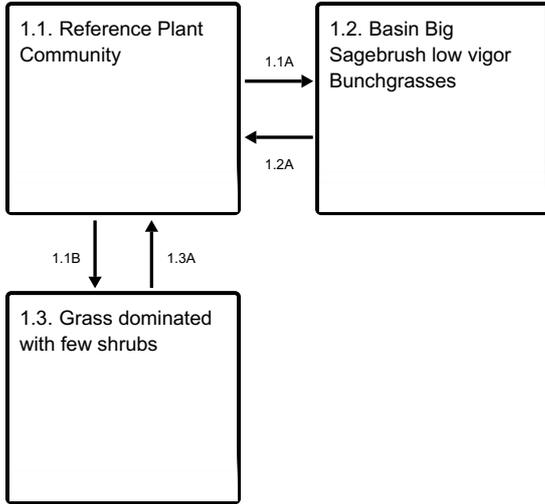
### Ecosystem states



**T1A** - frequent fire or improper grazing management

**T2A** - range seeding

### State 1 submodel, plant communities



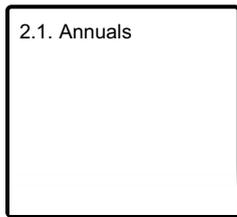
1.1A - improper grazing management and in the absence of fire

1.1B - fire

1.2A - prescribed grazing and brush management

1.3A - prescribed grazing and no fire

### State 2 submodel, plant communities



### State 3 submodel, plant communities



## State 1 Reference State

### Dominant plant species

- basin big sagebrush (*Artemisia tridentata ssp. tridentata*), shrub
- bluebunch wheatgrass (*Pseudoroegneria spicata*), grass

### Community 1.1 Reference Plant Community

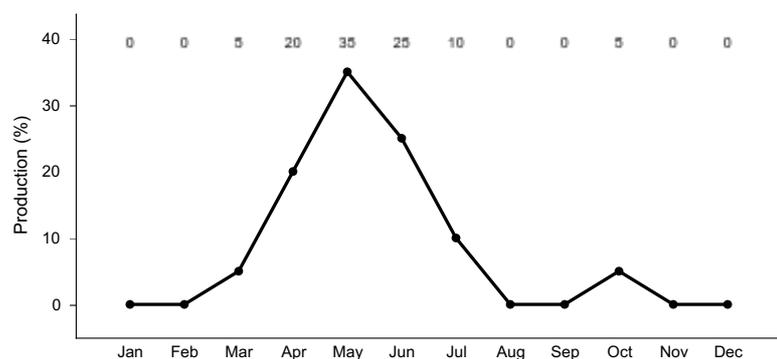
1.1 Basin Big Sagebrush - Bluebunch Wheatgrass - Basin Wildrye Antelope Bitterbrush This plant community is dominated by basin big sagebrush with bluebunch wheatgrass and basin wildrye in the understory. Antelope bitterbrush is the subdominant shrub species. Subdominant species include Thurber's needlegrass, Nevada bluegrass, Sandberg bluegrass bottlebrush squirreltail, arrowleaf balsamroot, tapertip hawksbeard, and lupine. Natural fire frequency is 20-50 years.

**Resilience management.** The HCPC is Reference Community Phase 1.1. This plant community is dominated by basin big sagebrush with bluebunch wheatgrass and basin wildrye in the understory. Antelope bitterbrush is the subdominant shrub species. Subdominant species include Thurber's needlegrass, Nevada bluegrass, Sandberg

bluegrass, bottlebrush squirreltail, arrowleaf balsamroot, tapertip hawksbeard, and lupine. The plant species composition of Phase 1.1 is listed later under “Reference 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 very dominant, followed by tall shrubs being more dominant than perennial forbs while shallow rooted perennial bunchgrasses are subdominant.

**Table 5. Annual production by plant type**

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	325	375	450
Shrub/Vine	195	225	270
Forb	130	150	180
<b>Total</b>	<b>650</b>	<b>750</b>	<b>900</b>



**Figure 4. Plant community growth curve (percent production by month). ID0301, ARTRV HCPC. State 1.**

## Community 1.2

### Basin Big Sagebrush low vigor Bunchgrasses

1.2 Basin Big Sagebrush - Bottlebrush Squirreltail Sandberg Bluegrass This plant community is dominated by basin big sagebrush with reduced amounts of bluebunch wheatgrass and basin wildrye. Bottlebrush squirreltail and Sandberg bluegrass have increased in the understory. All deep-rooted perennial bunchgrasses are typically in low vigor. Basin big sagebrush has increased as well as some other tall shrubs. Antelope bitterbrush may still be present but in reduced vigor and hedged. This state has developed due to improper grazing management and lack of fire. Some cheatgrass, bulbous bluegrass and/or medusahead may have invaded the site.

## Community 1.3

### Grass dominated with few shrubs

1.3 Bluebunch Wheatgrass - Basin Wildrye - Sandberg Bluegrass - Root sprouting shrubs This plant community is dominated by bluebunch wheatgrass with some rabbitbrush. Thurber’s needlegrass and Nevada bluegrass can be lost due to fire. Basin wildrye, bottlebrush squirreltail and Sandberg bluegrass have increased. Forbs remain about in the same proportion as Plant Community 1.1. Basin big sagebrush and antelope bitterbrush have been reduced significantly due to wildfire. Some cheatgrass, bulbous bluegrass and/or medusahead may have invaded the site. This plant community is the result of wildfire.

## Pathway 1.1A

### Community 1.1 to 1.2

Phase 1.1 to 1.2. Develops with improper grazing management and in the absence of fire.

## Pathway 1.1B

### Community 1.1 to 1.3

## Pathway 1.2A Community 1.2 to 1.1

Phase 1.2 to 1.1. Develops with prescribed grazing and brushmanagement.

## Pathway 1.3A Community 1.3 to 1.1

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

## State 2 Annuals

**Resilience management.** 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 cross a threshold and retrogress to a new site with reduced potential. It is not economically practical to return this plant community to State 1 with accelerating practices.

### Dominant plant species

- cheatgrass (*Bromus tectorum*), grass
- bulbous bluegrass (*Poa bulbosa*), grass

## Community 2.1 Annuals

2. Cheatgrass - Bulbous Bluegrass - Annuals This plant community is dominated by cheatgrass, bulbous bluegrass and /or other annuals. Medusahead may also be present. Root sprouting shrubs such as rabbitbrush and horsebrush can be present, dependent upon, how frequent, fire has occurred. Some soil loss has occurred. This state has developed due to frequent fires and improper grazing management. The site has crossed the threshold. It is not economically practical to return this plant community to State 1 with accelerating practices.

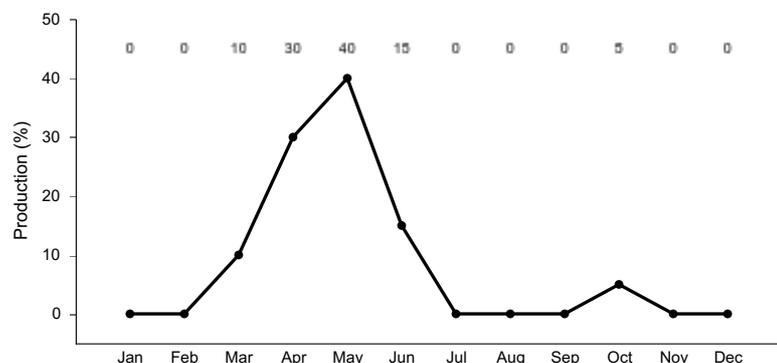


Figure 5. Plant community growth curve (percent production by month). ID0302, ARTRV Early Seral.

## State 3 Seeded State

### Dominant plant species

- crested wheatgrass (*Agropyron cristatum*), grass

## Community 3.1 Rangeland Seeding

3. Seeded This plant community results from range seeding. The seeding may be introduced species or it may be made up of native species that attempt to mimic the historic plant community.

## Transition T1A State 1 to 2

State 1 Phase 1.3 to State 2. Develops through frequent fire or improper grazing management. The site has crossed the threshold. It is not economically practical to return this plant community to State 1 with accelerating practices.

## Transition T2A State 2 to 3

State 2 to State 3. Results from range seeding.

### 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				325–450	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	100–150	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	100–150	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	25–35	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	25–30	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	25–30	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	1–10	–
<b>Forb</b>					
2				130–180	
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	40–60	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	20–30	–
	lupine	LUPIN	<i>Lupinus</i>	25–30	–
	phlox	PHLOX	<i>Phlox</i>	15–20	–
	desertparsley	LOMAT	<i>Lomatium</i>	15–20	–
	milkvetch	ASTRA	<i>Astragalus</i>	15–20	–
<b>Shrub/Vine</b>					
3				195–270	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	150–225	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	60–90	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	1–20	–
	buckwheat	ERIOG	<i>Eriogonum</i>	1–15	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	1–15	–
	spineless horsebrush	TECA2	<i>Tetradymia canescens</i>	1–15	–

### 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, pronghorn antelope, and elk. Important seasonal habitat is provided for

resident and migratory animals including western toad, 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. Changes in the plant community composition can reduce the numbers and diversity of wildlife species in the area. With reduced shrub cover shrub obligate avian and mammal species become rare including sage-grouse, brewer's sparrow, sage thrasher and pygmy rabbits. Encroachment of noxious and invasive plant species (cheatgrass, Rush skeleton weed, and knapweed) can replace native plant species which provide critical feed, brood-rearing and nesting cover for a variety of native wildlife. The loss of herbaceous understory vegetation can have a negative impact on ground nesting birds, while the loss of shrub cover negatively affects both ground and shrub nesting avians. Water is limited only being provided by seasonal runoff and artificial water catchments. 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 the cave obligate harvestman.

State 1 Phase 1.1 - Basin Big Sagebrush/ Bluebunch Wheatgrass/ Basin Wildrye/ Antelope Bitterbrush Reference Plant Community (RPC): The RPC provides a diversity of grasses, forbs and shrubs, used by native insect communities who assist in the pollination process for the plant community. Cave dwelling insects and mammals would be supported by this plant community. The reptile and amphibian community is represented by leopard lizard, short horned lizard, sagebrush lizard, western skink, western rattlesnake, western toad, boreal chorus frog and northern leopard frog. Amphibians are associated with springs and isolated water bodies adjacent to this plant community. Shrub-steppe obligate avian species of concern include the Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Critical habitat (lek sites, nesting areas, winter cover and food) for the sage-grouse is provided by this diverse plant community. The plant community supports seasonal (winter and spring) needs of large mammals (mule deer, antelope, and elk) by providing food and cover. Basin big sagebrush is preferred browse for wild ungulates. A diverse small mammal population including golden-mantled ground squirrels, chipmunks, yellow-bellied marmots and pygmy rabbits would utilize the site.

State 1 Phase 1.2- Basin Big Sagebrush/ Bottlebrush Squirreltail/ Sandberg Bluegrass Plant Community: This plant community is the result of improper grazing management. An increase in canopy cover of sagebrush contributes to a sparse herbaceous understory and can lead to an increase in threetip sagebrush. Grasses, forbs and shrubs, are used by native insects that assist in pollination but the reduced herbaceous understory results in reduced diversity and numbers of insects. The reptile and amphibian community is represented by leopard lizard, desert horned lizard, short horned lizard, sagebrush lizard, western skink, western rattlesnake, western toad, boreal chorus frog, and northern leopard frog. A decrease in population and diversity of reptiles and amphibians may occur due to the reduced diversity and canopy cover of herbaceous vegetation. This plant community supports a variety of migratory and resident avian species that utilize the grasses, forbs and shrubs for food, brood rearing and nesting cover. Reduced herbaceous understory is a key factor in limiting the use of this plant community by avian species. Key shrub-steppe avian species include Brewer's sparrow, sage sparrow, sage thrasher and sage-grouse. Critical habitat (lek sites, nesting areas, winter cover and food) for sage-grouse is limited due to the reduced diversity and canopy cover of herbaceous vegetation. The plant community supports seasonal needs of large mammals (mule deer, antelope, and elk) providing food and cover on a seasonal basis. Basin big sagebrush is preferred browse for wild ungulates. With an increase in threetip sagebrush the wildlife use would be affected due to the poor palatability and nutritional value of threetip. A diverse small mammal population including golden-mantled ground squirrels, chipmunks and yellow-bellied marmots would utilize this plant community.

State 1 Phase 1.3 – Bluebunch Wheatgrass/ Sandberg Bluegrass/ Basin Wildrye/ Bottlebrush Squirreltail Plant Community: This plant community is the result of frequent fire. The plant community, dominated by herbaceous vegetation with little or no sagebrush provides less vertical structure, limiting use by shrub obligate animals. Insect diversity would be reduced but a diverse native forb plant community would still support select pollinators. Cave dwelling insects and mammals from adjacent habitats would be supported by this plant community. Reptile use, including short horned lizard, sagebrush lizard and western rattlesnakes, would be limited or excluded due to the absence of sagebrush. The dominance of herbaceous vegetation with little sagebrush canopy cover would eliminate use of these areas for nesting by Brewer's sparrow, sage sparrow, sage thrasher, and sage-grouse. This plant community provides limited brood-rearing habitat for sage-grouse if adjacent to sagebrush cover. Winter habitat for sage grouse is eliminated. The dominant herbaceous vegetation improves habitat for grassland avian species (horned lark and western meadowlark). Large mammal (mule deer, antelope, and elk) use for food would be seasonal but would offer little thermal cover and young of year cover. Small mammal diversity would be reduced and the plant community would not provide suitable habitat for pygmy rabbits.

State 2 – Cheatgrass/ Bulbous Bluegrass and Annual Plant Community: This plant community would not support a diverse insect community. The reduced forb component in the plant community would support a very limited population of pollinators. Most reptilian species would not be supported with food, water or cover. The plant community would not support sage-grouse, sage thrasher, Brewer's sparrow or sage sparrow. Grassland avian species would also avoid these areas. 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) would be more palatable. At other times of the year large mammals would not regularly utilize these areas due to its poor food and cover conditions. The reduction of insect populations and diversity would reduce suitability of the site for bats. The diversity and populations of small mammals would be dominated by open grassland species. Habitat for the Columbian ground squirrel would be provided with this plant community.

State 3 - Range Seeding Plant Community: The proposed seeding mixture (native or non-native) would determine the animal species that would utilize the area. 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, avians, mammals, or sagebrush obligate species. Grassland animal species including western meadowlark, horned lark, savannah sparrow, deer mouse, kangaroo rat and elk would utilize this site for nesting and/or foraging. Birds of prey including hawks and falcons may range throughout these areas looking for prey species.

#### Grazing Interpretations.

It is suited for livestock and recreation use in the late spring, summer, and fall. The site is often the key grazing area for a grazing unit.

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**

The soils in this site are in hydrologic group B. When ground cover is at or near potential the erosion hazard is slight.

### **Recreational uses**

This site provides opportunities for big game hunting, hiking, and horseback riding. In the spring, flowering forbs offer photographic opportunities. ATV's use the site due to its' gentle slopes.

### **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:

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## References

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## Other references

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USDA, Forest Service, Fire Effects Information Database. 2004. [www.fs.fed.us/database/feis](http://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

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## Approval

Kirt Walstad, 12/13/2023

## 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.

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Approved by	Kirt Walstad
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 greater than 15 percent and immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam.

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2. **Presence of water flow patterns:** Water-Flow Patterns: rarely occur on this site. When they occur they are short and 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. In areas where slopes approach 15 percent and where flow patterns and/or rills are present, a few pedestals may be expected.
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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground: On sites in mid-seral status bare ground may range from 40-60 percent.
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5. **Number of gullies and erosion associated with gullies:** Gullies: none
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6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind-Scoured, Blowouts, and/or Deposition Areas: usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.
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7. **Amount of litter movement (describe size and distance expected to travel):** Litter Movement: fine litter in the interspaces may move up to 2 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):** Soil Surface Resistance to Erosion: values should range from 3 to 5.
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil Surface Loss or Degradation: the A or A1 horizon is typically 5 to 21 inches thick. Structure ranges from weak and moderate fine granular to moderate thin platy to weak fine subangular blocky. Soil organic matter (SOM) ranges from 1 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:** Plant Community Composition and Distribution Relative to Infiltration: bunchgrasses, especially deep-rooted perennials, slow run-off and increase infiltration. Tall shrubs accumulate 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: 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: Functional/ Structural Groups: cool season deep-rooted perennial bunchgrasses >> tall shrubs > perennial forbs > shallow rooted bunchgrasses.

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):** Plant Mortality/Decadence: basin big sagebrush will become decadent in the absence of fire and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase.
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14. **Average percent litter cover (%) and depth ( in):** Litter Amount: additional litter cover data is needed but is expected to be 20-25 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 (840 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 45-55 percent of the total production, forbs 10-20 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, bulbous bluegrass, whitetop, rush skeletonweed, musk, and scotch thistle, and diffuse and spotted knapweed.
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17. **Perennial plant reproductive capability:** Reproductive Capability of Perennial Plants: all functional groups have the potential to reproduce in most years.
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