

## Ecological site R023XY308OR NORTH SLOPES 10-12 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.

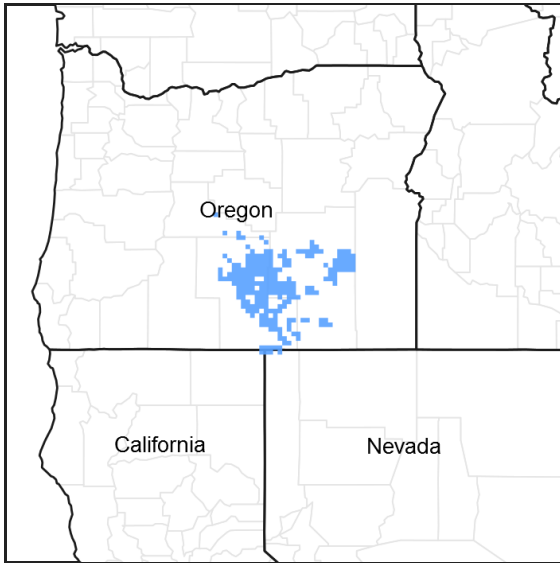


Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

### Associated sites

R023XY212OR	<b>LOAMY 10-12 PZ</b> Loamy 10-12" PZ
R023XY300OR	<b>SOUTH SLOPES 10-12 PZ</b> South Slopes 8-12" PZ
R023XY312OR	<b>SHALLOW NORTH 12-16 PZ</b> Shallow North 12-16" PZ

### Similar sites

R023XY318OR	<b>LOAMY 12-16 PZ</b> Loamy 12-16" PZ (non-aspect site at higher precipitation)
R023XY310OR	<b>NORTH SLOPES 12-16 PZ</b> North Slopes 12-16" PZ (higher precipitation)

Table 1. Dominant plant species

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

Herbaceous	(1) <i>Festuca idahoensis</i> (2) <i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>
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## Physiographic features

This site is on north-facing hillslopes and escarpments. Slopes range from 20 to 60 percent. Elevations range from 4500 to 6000 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Escarpment (2) Hill
Elevation	1,372–1,829 m
Slope	20–60%
Aspect	N

## Climatic features

The annual precipitation is 10 to 12 inches most of which occurs in the form of snow during November to March. Spring rains are common. The soil temperature regime is frigid. Extreme air temperatures range from 100 degrees F to -30 degrees F. The frost-free period is about 50 to 90 days. The optimum period for plant growth is from early May to mid-July.

**Table 3. Representative climatic features**

Frost-free period (average)	90 days
Freeze-free period (average)	0 days
Precipitation total (average)	305 mm

## Influencing water features

### Soil features

The soils in this site are medium textured throughout, moderately-deep to deep, and well-drained. The soils are formed in colluvium and/or residuum. The surface permeability is moderate and the subsoil has moderately slow permeability. The available water holding capacity (AWC) is 1 to 4 inches for the profile. The soil has a dark colored surface 20 or more inches thick which contains 25 to 60 percent rock fragments. The subsoil contains 20 to 80 percent rock fragments.

**Table 4. Representative soil features**

Parent material	(1) Colluvium–basalt (2) Residuum–welded tuff
Surface texture	(1) Extremely cobbly loam (2) Very gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately slow
Soil depth	51–152 cm
Surface fragment cover <=3"	35–60%
Available water capacity (0-101.6cm)	1.52–10.16 cm

Soil reaction (1:1 water) (0-101.6cm)	6.6–7.8
Subsurface fragment volume >3" (Depth not specified)	35–80%

## Ecological dynamics

Range in Characteristics:

The reference native plant community is dominated by Idaho fescue and Wyoming big sagebrush. Bluebunch wheatgrass is prominent in the understory. Vegetative composition is about 75 percent grasses, 10 percent forbs, and 15 percent shrubs.

Bluebunch wheatgrass increases as aspect becomes more southerly. Gravels in the surface layers favor increases in Thurber's needlegrass.

Four states have been identified for this site: a reference state; a state with the presence of annuals; a state with a shrub/annual co-dominance; and a state with annual dominance.

Reference State: Plant community phase change is driven by infrequent fire. Wyoming and basin big sagebrush decline after fire while Thurber's needlegrass, Idaho fescue and other grasses increase. Rabbitbrush may temporarily increase after fire. Time facilitates the reintroduction of sagebrush. The introduction of invasive annual grasses and forbs transitions into state 2.

State 2: Compositionally similar to the reference state with a trace of cheatgrass and weedy forbs. Ecological function has not changed, however the resiliency of the state has been reduced by the presence of invasive weeds. Prescribed grazing and infrequent fire (> 50 year return interval) maintain state dynamics. Improper grazing or prolonged drought favors Wyoming and basin big sagebrush, squirreltail and Sandberg's bluegrass. Prescribed grazing and/or release from drought may reverse the decline in needlegrass and Idaho fescue production. Infrequent fire reduces the shrub community and promotes the bunchgrass component. Mismanaged grazing and/or prolonged drought leads to a biotic threshold and into state 3.

State 3: Wyoming and basin big sagebrush is decadent with little recruitment. The perennial grass component is significantly reduced in both density and productivity. Cheatgrass and/or annual forbs and/or Sandberg's bluegrass along with sagebrush control site resources and drive ecological dynamics. Bare ground is abundant. Spatial and temporal energy capture and nutrient cycling has been truncated. Infiltration may be reduced due to lack of ground cover. Risk of soil erosion by both wind and water is increased. Catastrophic wildfire will lead to an abiotic threshold and into state 4.

State 4: Cheatgrass and/or annual weed dominated plant community with limited to no shrub or perennial grass component. Soil erosion and redistribution along with changes in dynamic soil properties affect the hydrologic cycle and thus the nutrient cycle. Harsh environmental factors increase state resiliency to change. This state has a reduced likelihood of occurring or persisting due to the frigid soil temperature regime.

Response to Disturbance:

If heavy grazing causes site deterioration, Idaho fescue decreases and big sagebrush increases. On severely disturbed areas of this site, green rabbitbrush, prickly gilia, and vetch may be prominent.

## State and transition model

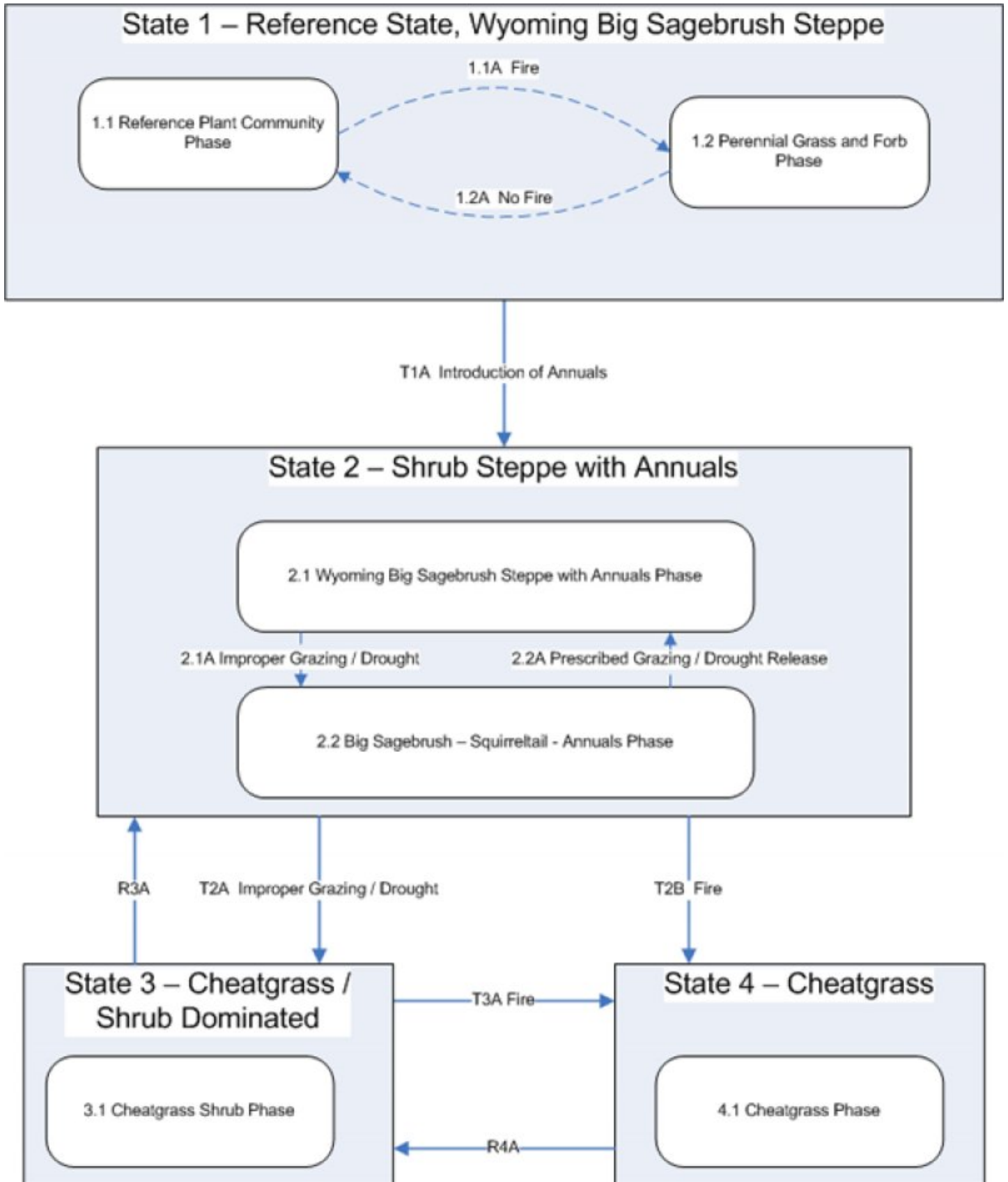


Figure 3. Group 6, STM

**State 1  
Reference State**

**Community 1.1  
Reference Plant Community**

The potential native plant community is dominated by Idaho fescue and Wyoming big sagebrush. Bluebunch

wheatgrass is prominent in the understory. Vegetative composition is about 75 percent grasses, 10 percent forbs, and 15 percent shrubs. Approximate ground cover is 50 to 65 percent (basal and crown).

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

<b>Plant Type</b>	<b>Low (Kg/Hectare)</b>	<b>Representative Value (Kg/Hectare)</b>	<b>High (Kg/Hectare)</b>
Grass/Grasslike	588	841	1093
Shrub/Vine	118	168	219
Forb	78	112	146
<b>Total</b>	<b>784</b>	<b>1121</b>	<b>1458</b>

## **Additional community tables**

**Table 6. Community 1.1 plant community composition**

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Perennial, deep-rooted, dominant</b>			448–673	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	448–673	–
2	<b>Perennial, moderately-deep rooted bunchgrass</b>			112–168	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	112–168	–
4	<b>Perennial, shallow-rooted, bunchgrass</b>			78–168	
	Cusick's bluegrass	POCU3	<i>Poa cusickii</i>	56–112	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	22–56	–
5	<b>Other perennial grasses, all</b>			11–34	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	0–11	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0–11	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–11	–
<b>Forb</b>					
7	<b>Perennial, all, dominant</b>			34–67	
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	11–22	–
	phlox	PHLOX	<i>Phlox</i>	11–22	–
	vetch	VICIA	<i>Vicia</i>	11–22	–
9	<b>Other perennial forbs, all</b>			11–45	
	naked mariposa lily	CANU2	<i>Calochortus nudus</i>	0–11	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–11	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	0–11	–
	lupine	LUPIN	<i>Lupinus</i>	0–11	–
<b>Shrub/Vine</b>					
11	<b>Evergreen</b>			78–168	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	56–112	–
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata ssp. wyomingensis</i>	22–56	–
15	<b>Other shrubs</b>			22–56	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0–22	–
	slender buckwheat	ERMI4	<i>Eriogonum microthecum</i>	0–22	–
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	0–22	–

## Animal community

Livestock grazing:

This site is suitable for livestock grazing use in spring, summer, and fall. Grazing management should be keyed to Idaho fescue. Deferred grazing is recommended at least once every three years. On slopes greater than 50 percent, cattle use will be reduced.

Native Wildlife Associated with the Climax Community:

Mule deer  
Bighorn Sheep  
Quail  
Burrowing rodents

Rabbits

Mule deer use this site in spring, summer, and fall.

## Hydrological functions

The soils of this site have medium infiltration rates and rapid to very rapid runoff potential. The hydrologic soil group is B.

## Recreational uses

This site can provide upland game hunting.

## Contributors

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## 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)	Jeff Repp and Bruce Frannsen
Contact for lead author	State Rangeland Management Specialist for NRCS - OR
Date	08/17/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:** None, Moderate sheet & rill erosion hazard
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2. **Presence of water flow patterns:** None to some
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3. **Number and height of erosional pedestals or terracettes:** None to very few terracettes
- 

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 2-8%
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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:** None, Slight wind erosion hazard
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7. **Amount of litter movement (describe size and distance expected to travel):** Fine - limited movement
- 
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Moderately resistant to erosion: aggregate stability = 3-5
- 
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Deep well drained very gravelly to extremely cobbly loam; weak thin platy to weak fine subangular block structure 7 to 15 inches thick, dry color value 4 - 6: Moderate OM (1-3%)
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate to significant ground cover (50-65%) and moderate to very steep slopes (20-70%) moderately limit rainfall impact and overland flow
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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):** None
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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: Idaho fescue > Bluebunch wheatgrass > shrubs > other grasses > forbs
- Sub-dominant:
- Other:
- Additional:
- 
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Normal decadence and mortality expected
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14. **Average percent litter cover (%) and depth ( in):**
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 1300, Normal: 1000, Unfavorable: 700 lbs/acre/year at high RSI (RPC)
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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: Western Juniper readily invades the site. Cheatgrass and Medusahead invade sites that have lost deep rooted perennial grass functional groups.
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17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually
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