USDA Natural Resources
Conservation Service

Ecological site R010XC065OR
SR Cool North 9-12 PZ

Last updated: 4/10/2025
Accessed: 05/21/2025

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.

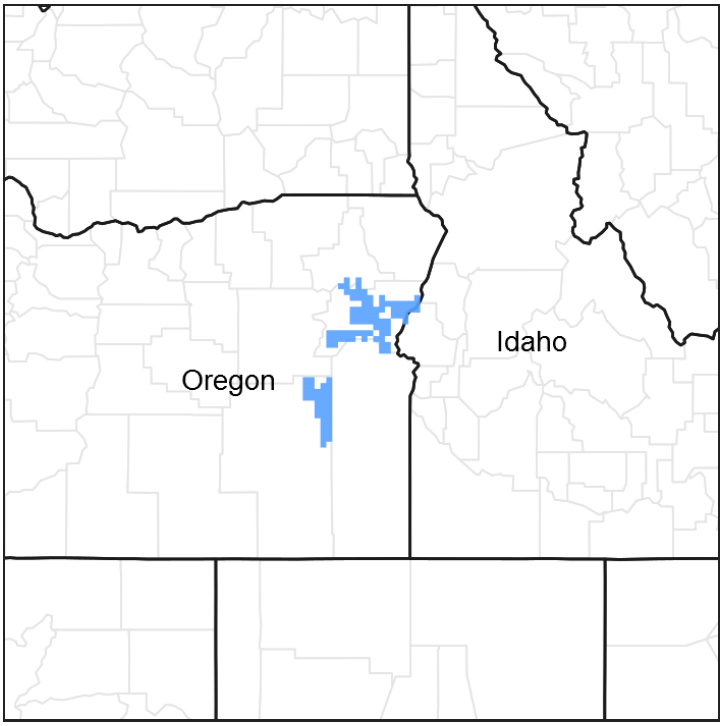


Figure 1. Mapped extent

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

R010XC030OR	**SR Cool 9-12 PZ** SR Cool 9-12 PZ
R010XC043OR	**SR South 9-12 PZ** SR South 9-12 PZ

Similar sites

R010XC030OR	**SR Cool 9-12 PZ** SR Cool 9-12 PZ (lower production, different composition -less Idaho fescue, more Wyoming big sagebrush)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. wyomingensis*
Herbaceous	(1) *Festuca idahoensis*

Physiographic features

This site occurs on northerly aspects of terraces, tablelands and rolling uplands. Slopes range from 12 to 50%. Elevations typically range from 3,200 to 4,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Hill
Flooding frequency	None
Ponding frequency	None
Elevation	3,200–4,500 ft
Slope	12–50%
Water table depth	0 in
Aspect	N

Climatic features

The annual precipitation ranges from 9 to 12 inches, most of which occurs in the form of snow during the months of December through March. Localized convection storms occasionally occur during the summer. The soil temperature regime is cool mesic with a mean air temperature of 45 degrees F. Temperature extremes range from 95 to -20 degrees F. The frost free period ranges from 50 to 90 days. The optimum growth period for plant growth is April through June.

Table 3. Representative climatic features

Frost-free period (average)	90 days
Freeze-free period (average)	144 days
Precipitation total (average)	12 in

Influencing water features

Soil features

The soils of this site are typically moderately deep to deep and well drained. Typically the surface layer is a silt loam to silty clay loam 8 to 12 inches thick. The subsoil is a silt loam to clay loam 12 to 40 inches thick. Depth to bedrock, an indurated pan or lacustrine sediments range from 20 to 60 inches. Permeability is moderate. The available water holding capacity (AWC) is about 4 to 6 inches for the profile. The erosion potential is moderate to severe.

Table 4. Representative soil features

Surface texture	(1) Stony silt loam (2) Clay loam (3) Loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderate to moderately slow
Soil depth	20–60 in
Surface fragment cover <=3"	0–27%
Surface fragment cover >3"	0–25%
Available water capacity (0-40in)	4–6 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Subsurface fragment volume <=3" (Depth not specified)	6–23%

Subsurface fragment volume >3" (Depth not specified)	0–26%

Ecological dynamics

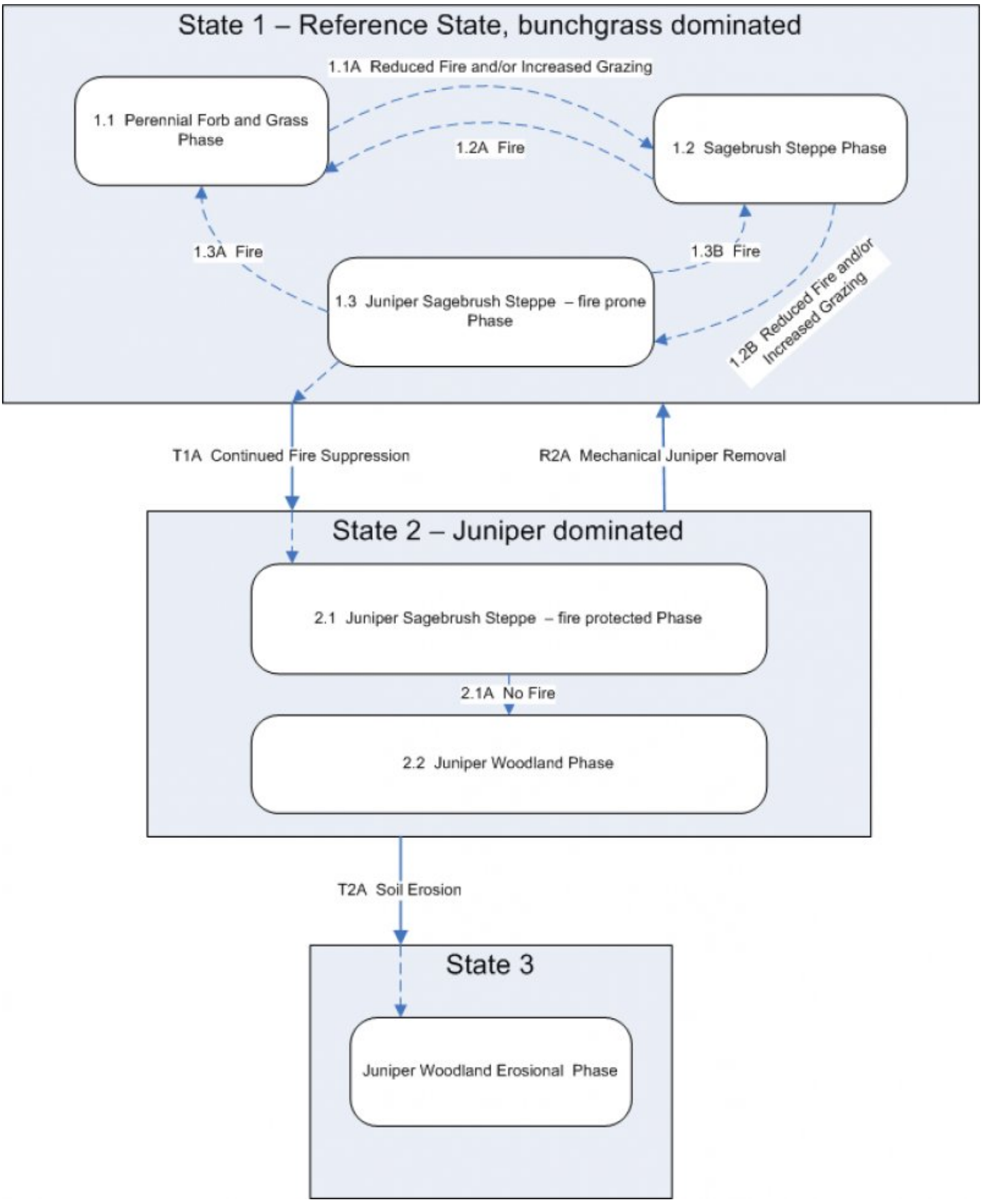
The potential native plant community is dominated by Wyoming big sagebrush and Idaho fescue. Bluebunch wheatgrass, Sandberg bluegrass and a variety of forbs and other shrubs are present. Vegetative composition of the community is approximately 90 percent grasses, 5 percent forbs and 5 percent shrubs. The approximate ground cover is 70 to 80 percent (basal and crown).

Range of Characteristics:
Idaho fescue is strongly dominant. Bluebunch wheatgrass increases on easterly and westerly exposures. Needlegrasses increase on droughtier sites and on surfaces with loamy to fine sandy loam textures. Production increases at the upper end of the precipitation zone.

Response to Disturbance -States:
When the condition of the site deteriorates as a result of over grazing, Idaho fescue decreases. Wyoming big sagebrush, Sandberg bluegrass increase. With continued overgrazing Wyoming big sagebrush and Sandberg bluegrass become dominant. Annual invasion is limited unless major ground disturbance occurs. With further deterioration, bare ground increases and excessive erosion contributes to downstream sedimentation.

States: ARTRW/POSE-*Bare Ground*; POSE-Annuals-*Bare Ground*

State and transition model



State 1
Reference

Community 1.1

Reference Plant Community

The reference native plant community is dominated by Wyoming big sagebrush and Idaho fescue. Bluebunch wheatgrass, Sandberg bluegrass and a variety of forbs and other shrubs are present. Vegetative composition of the community is approximately 90 percent grasses, 5 percent forbs and 5 percent shrubs. The approximate ground cover is 70 to 80 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	720	990	1440
Shrub/Vine	40	55	80
Forb	40	55	80
Total	**800**	**1100**	**1600**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Dominant, perennial deep-rooted bunchgrass**			770–880	
	Idaho fescue	FEID	*Festuca idahoensis*	770–880	–
2	**Sub-dominant, perennial deep-rooted grasses**			33–253	
	needle and thread	HECO26	*Hesperostipa comata*	0–110	–
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	33–88	–
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	0–55	–
4	**Dominant, perennial shallow-rooted grass**			33–88	
	Sandberg bluegrass	POSE	*Poa secunda*	33–88	–
5	**Other perennial grasses**			20–74	
	western needlegrass	ACOC3	*Achnatherum occidentale*	0–22	–
	basin wildrye	LECI4	*Leymus cinereus*	10–22	–
	squirreltail	ELEL5	*Elymus elymoides*	5–15	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	5–15	–

Forb					
7	**Dominant, perennial forbs**			21–66	
	milkvetch	ASTRA	*Astragalus*	7–22	–
	buckwheat	ERIOG	*Eriogonum*	7–22	–
	lupine	LUPIN	*Lupinus*	7–22	–
9	**Other perennial forbs**			33–105	
	common yarrow	ACMI2	*Achillea millefolium*	5–11	–
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	5–11	–
	fleabane	ERIGE2	*Erigeron*	5–11	–
	desertparsley	LOMAT	*Lomatium*	5–11	–
	phlox	PHLOX	*Phlox*	5–11	–
	sagebrush buttercup	RAGL	*Ranunculus glaberrimus*	3–8	–
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	0–8	–
	agoseris	AGOSE	*Agoseris*	3–8	–
	stoneseed	LITHO3	*Lithospermum*	0–8	–
	onion	ALLIU	*Allium*	0–5	–
	Indian paintbrush	CASTI2	*Castilleja*	0–5	–
	woodland-star	LITHO2	*Lithophragma*	2–5	–
	brodiaea	BRODI	*Brodiaea*	0–3	–
Shrub/Vine					
11	**Dominant, evergreen shrub**			33–55	
	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	33–55	–
12	**Subdominant, evergreen shrub**			11–22	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	11–22	–
15	**Other shrubs**			5–55	
	threetip sagebrush	ARTR4	*Artemisia tripartita*	0–22	–
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	5–22	–
	threetip sagebrush	ARTR4	*Artemisia tripartita*	5–14	–
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	5–14	–

	rabbitbrush		*viscidiflorus*		
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	5–14	–
	horsebrush	TETRA3	*Tetradymia*	5–14	–
	littleleaf horsebrush	TEGL	*Tetradymia glabrata*	0–11	–

Animal community

This site is suitable for livestock grazing use in the spring, early summer, and fall under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Grazing management should be keyed for Idaho fescue. Deferred grazing or rest is recommended at least once every three years.

This site is commonly used by pronghorn antelope, mule deer, rabbits, rodents, upland birds and various predators. It is a preferred site for sage grouse nesting, rearing and wintering. Antelope and mule deer make excellent use of the site for winter and spring forage.

Hydrological functions

The soils of this site are typically in an upland topographic position. They have moderate runoff potential and medium infiltration rates when the hydrologic cover is high. Hydrologic cover is high when the Idaho fescue and other deep rooted bunchgrass component is >70 percent of potential.

Contributors

A Bahn, G Kuehl, H Barrett
E Ersch
T.Bloomer, B.Gillaspy, E.Petersen, A.Bahn

Approval

Kirt Walstad, 4/10/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate.

Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Jeff Repp and Bruce Franssen
Contact for lead author	NRCS Oregon State Rangeland Management Specialist
Date	04/24/2003
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None to some

---

2. **Presence of water flow patterns:** None to some

---

3. **Number and height of erosional pedestals or terracettes:** None to very few (some frost heaving)

---

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0-5%

---

5. **Number of gullies and erosion associated with gullies:** None

---

6. **Extent of wind scoured, blowouts and/or depositional areas:** None

---

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):** Slightly to significantly resistant to erosion: aggregate stability = 2-5

---

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Weak to moderate fine and medium granular to platy structure, dry color value 4-6, 2-12" thick; moderate OM (1-3%)

---

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Significant vegetative ground cover (70-80%) and limited bare ground (0-5%) on these gentle to steep slopes (12-80%) moderately to significantly limit rainfall impact and overland flow

---

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None

---

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: Perennial, deep-rooted, bunchgrasses

    Sub-dominant: Perennial, shallow-rooted, bunchgrasses => Evergreen shrubs

    Other: Perennial forbs

    Additional:

---

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

---

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

---

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 1600, Normal: 1100, Unfavorable: 800 lbs/acre/year at high RSI

---

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

---

17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually

---