

Ecological site R010XY116OR

Swale

12-16 PZ

Last updated: 4/10/2025
Accessed: 08/24/2026

General information

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

Associated sites

R010XY005OR	Loamy Bottom Loamy Bottom, mesic, 5000#/acre normal
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Similar sites

R010XY005OR	Loamy Bottom Loamy Bottom, mesic, 5000#/acre normal
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Table 1. Dominant plant species

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

Physiographic features

This site occurs adjacent to and on the floodplains of ephemeral streams. It is at the upper end of drainages occupying broad to narrow swale areas. Slopes range from 2 to 12%. Elevations range from 2,100 to 4,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Flood plain (2) Swale
Flooding frequency	None
Ponding frequency	None

Elevation	640 – 1,220 m
Slope	0 – 10 %
Water table depth	150 cm
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 12 to 16 inches, most of which occurs in the form of snow during the months of November through March. Ephemeral subsurface moisture augments the precipitation. Localized convection storms occasionally occur during the summer. The soil temperature regime is mesic to frigid near mesic with a mean annual air temperature of 50 degrees F. Temperature extremes range from 100 to -10 degrees F. The frost-free period ranges from 60 to 130 days. The optimum growth period for native plants is from April through June.

Table 3 Representative climatic features

Frost-free period (average)	130 days
Freeze-free period (average)	
Precipitation total (average)	410 mm

Influencing water features

Soil features

The soils of this site are recent, deep to very deep and well drained. Typically the surface layer is a silt loam about 10 inches thick. The subsoil is a silty clay loam over 40 inches thick. The substratum varies from alluvium to bedrock. Gravel content in the profile ranges from 0 to 30 percent. Permeability is moderate. The available water holding capacity (AWC) is about 8 to 10 inches for the profile. Seasonal subsurface flows from adjacent slopes augment the available water. The potential for erosion is moderate.

Table 4. Representative soil features

Surface texture	(1) Silt loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Moderate
Soil depth	130 cm

Surface fragment cover <=3"	0 – 30 %
Available water capacity (0-101.6cm)	20.32 – 25.4 cm

Ecological dynamics

Range In Characteristics:

The amount of basin wildrye in relation to bluebunch wheatgrass is dependent on the extent and duration of lateral subsurface water flows. Basin wildrye increases and bluebunch wheatgrass decreases on swales receiving subsurface flows late into the growing season. This would be on swales with large drainage areas. Conversely, bluebunch wheatgrass would increase on swales with limited drainage areas. This would typically be at the upper ends of watersheds where drainage area is limited. Production follows a similar pattern increasing on swales with large drainage areas. As a fire susceptible site, the amount of basin big sagebrush is influenced by fire frequency.

Response To Disturbance:

If the condition of the site deteriorates as a result of overgrazing, basin wildrye, bluebunch wheatgrass, and Idaho fescue decrease. Bluegrasses invade and basin big sagebrush increases. With further deterioration, annuals invade and useable forage production decreases. Streambanks become unstable from loss of vegetation and channels degrade, becoming deeper and wider in the process. Subsurface flows are affected. Peak discharges increase, the water table drops and storage of water for late season use is reduced. Erosion from concentrated flows reduces the site potential and contributes to downstream sedimentation.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Perennial, deep rooted, dominant			1821-3082	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	1121-1681	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	420-841	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	280-560	–
2	Perennial, deep rooted, sub-dominant			56-140	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	56-140	–
4	Perennial, shallow rooted, sub-dominant			84-224	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	56-140	–
	bluegrass	POA	<i>Poa</i>	28-84	–
5	Other perennial grasses			56-224	
	sedge	CAREX	<i>Carex</i>	0-56	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0-56	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	0-56	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0-56	–
Forb					
7	Perennial, dominant			56-112	
	buckwheat	ERIOG	<i>Eriogonum</i>	28-56	–
	lupine	LUPIN	<i>Lupinus</i>	28-56	–

9	Other perennial forbs			28-112	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-28	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0-28	–
	milkvetch	ASTRA	<i>Astragalus</i>	0-28	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	0-28	–
	fleabane	ERIGE2	<i>Erigeron</i>	0-28	–
	western stoneseed	LIRU4	<i>Lithospermum ruderales</i>	0-28	–
	desertparsley	LOMAT	<i>Lomatium</i>	0-28	–
	phlox	PHLOX	<i>Phlox</i>	0-28	–
	ragwort	SENEC	<i>Senecio</i>	0-28	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0-28	–
Shrub/Vine					
11	Perennial, Evergreen, Dominant			56-140	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	56-140	–
12	Perennial, Evergreen, Sub-dominant			28-56	
	green rabbitbrush	ERTE18	<i>Ericameria teretifolia</i>	28-56	–
14	Perennial, Deciduous, Sub-dominant			28-56	
	wax currant	RICE	<i>Ribes cereum</i>	28-56	–
15	Other shrubs			56-224	
	antelope bitterbrush	PUTR2	<i>Purshia tridentata</i>	0-56	–
	horsebrush	TETRA3	<i>Tetradymia</i>	0-56	–
Tree					
16	Perennial, Evergreen, Dominant			0-56	
	western juniper	JUOC	<i>Juniperus occidentalis</i>	0-56	–

Animal community

Livestock Grazing: This site is suited to use by cattle, sheep, and horses in late spring, summer and fall under a planned grazing system. Limitations in the spring are saturated wet soils and unstable banks. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Improvement and/or maintenance of herbaceous bank protection should be considered during all seasons, particularly going into winter for spring runoff protection. Native Wildlife Associated With The Potential Climax Community: Deer Antelope Elk Hawks Songbirds Rodents This site will offer food and cover for mule deer, elk, antelope, rodents, and a variety of birds. It is an important wintering area for mule deer, antelope and elk.

Hydrological functions

The soils are in hydrologic group B. The soils of this site have moderately low runoff potential.

Wood products

This site is susceptible to an increase in western juniper. Where this has occurred, the site will yield fence posts, firewood, and specialty products.

Other information

The soils in this site have good water holding capacities providing late season water for plant growth and slow water releases to streams. Increase in western juniper and the subsequent competition for moisture will lead to a reduction of available forage. Overgrazing can easily reduce ground cover and accelerate soil loss. Improving infiltration and permeability, and reducing runoff should be the immediate goal of juniper control. When incised channels are present, rehabilitation will markedly improve production, reduce downstream sedimentation and restore good hydrologic characteristics. On altered site the reintroduction of deep rooted plants may be needed to fully restore the site potential.

Contributors

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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)	
Contact for lead author	
Date	08/24/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills:

2. Presence of water flow patterns:

3. Number and height of erosional pedestals or terracettes:

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

5. Number of gullies and erosion associated with gullies:

6. Extent of wind scoured, blowouts and/or depositional areas:

7. Amount of litter movement (describe size and distance expected to travel):

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:

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

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:

Sub-dominant:

Other:

Additional:

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

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):

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:

17. Perennial plant reproductive capability:
