

Ecological site R010XY125OR

Gravelly Fan

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.

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 on fans near and at the outlets of ephemeral streams. Braiding is common. It often occurs along major rivers and streams as a series of coalescing fans. Slopes range from 2 to 15 percent. Elevation varies from 2100 to 4500 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan (2) Braided stream
Elevation	640 – 1,370 m
Slope	0 – 20 %
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. A seasonal supply of deep subsurface moisture augments the precipitation. Localized convectional storms occasionally occur during the summer. The soil temperature regime is typically near frigid with a mean annual air temperature of 50 degrees F. Temperature extremes range from 100 to -20 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, skeletal and well-drained. Typically the surface layer is a gravelly or shaly loam about 30 inches thick. The subsoil is a gravelly or shaly loam over 20 inches thick. The substratum is alluvium. Permeability is moderate. The available water holding capacity (AWC) is about 8 to 10 inches for the profile. Deep seasonal subsurface flows augment the available water. The potential for erosion is moderate.

Table 4. Representative soil features

Surface texture	(1) Gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	130 cm
Available water capacity (0-101.6cm)	20.32 – 25.4 cm

Ecological dynamics

Range in Characteristics:

Basin wildrye is dominant with production dependent on the extent and duration of lateral subsurface water flows. Bluebunch wheatgrass increases on drier areas with limited subsurface flows. Production follows a similar pattern, increasing on fans that receive late subsurface flows from large drainage areas. Idaho fescue increases on northerly aspects. As a fire susceptible site, the amount of basin big sagebrush and juniper, is influenced by fire frequency.

Response to Disturbance:

If the condition of the site deteriorates as a result of overgrazing, basin wildrye and Idaho fescue decrease. Bluebunch wheatgrass and bluegrasses increase. With further deterioration, basin big sagebrush continues to increase and annuals and juniper invade. Basin big sagebrush effectively replaces basin wildrye in the use of deep moisture. Streambanks become unstable from loss of vegetation and channels degrade, becoming wider in the process. Bareground increases, filtering capacity is lost, and downstream sedimentation increases.

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			2018-2690	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	2018-2690	–
2	Perennial, deep-rooted, sub-dominant			572-1345	
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	336-673	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	168-504	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	67-168	–
5	Other perennial grasses, all			67-168	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0-56	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0-56	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0-56	–
Forb					
7	Perennial, all, dominant			67-135	
	milkvetch	ASTRA	<i>Astragalus</i>	34-67	–
	lupine	LUPIN	<i>Lupinus</i>	34-67	–
9	Other perennital forbs, all			34-101	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-11	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0-11	–
	arrowleaf balsamroot	BASA3	<i>Balsamorhiza sagittata</i>	0-11	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	0-11	–
	fleabane	ERIGE2	<i>Erigeron</i>	0-11	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0-11	–
	stoneseed	LITHO3	<i>Lithospermum</i>	0-11	–
	desertparsley	LOMAT	<i>Lomatium</i>	0-11	–
	phlox	PHLOX	<i>Phlox</i>	0-11	–
Shrub/Vine					
11	Perennial, evergreen, dominant			34-168	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	34-168	–
12	Perennial, evergreen, sub-dominant			34-67	
	rabbitbrush	CHRY9	<i>Chrysothamnus</i>	34-67	–
Tree					
16	Perennial, evergreen, dominant			34-67	
	western juniper	JUOC	<i>Juniperus occidentalis</i>	34-67	–

Animal community

Livestock Grazing: This site is suited to use by cattle, sheep, and horses in all seasons under a planned grazing system. Limitations in the spring are wet soils and unstable banks. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction, yet while soil moisture is adequate to allow the completion of the plant growth cycle. As a sediment deposition area, improvement and/or maintenance of herbaceous cover should be considered during all seasons, particularly in the fall and winter for spring runoff protection and sediment deposition. **Native Wildlife Associated with the Potential Climax Community:** Deer Antelope Elk Hawks Songbirds Rodents This site will offer food and cover for mule deer, antelope, elk, rodents, and a variety of birds. It is an important

wintering area for mule deer and elk.

Hydrological functions

The soils are in hydrologic group B. The soils of this site have moderately low runoff potential. This site is potentially subject to three high flow periods: low elevation snowmelt, high elevation snowmelt, and summer cloudburst flow.

Wood products

This site is susceptible to 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 release 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 sites, the reintroduction of basin wildrye may be needed to fully restore the site potential.

Contributors

Cici Brooks
J. Thompson, A. Bahn
M. Parks (OSU)

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	08/30/2026
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:
