

## **Ecological site R025XY007OR** **SILTY SWALE 11-13 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): 025X–Owyhee High Plateau

MLRA 25 lies within the Intermontane Plateaus physiographic province. The southern half is in the Great Basin Section of the Basin and Range Province. This part of the MLRA is characterized by isolated, uplifted fault-block mountain ranges separated by narrow, aggraded desert plains. This geologically older terrain has been dissected by numerous streams draining to the Humboldt River. The northern half of the area lies within the Columbia Plateaus geologic province. This part of the MLRA forms the southern boundary of the extensive Columbia Plateau basalt flows. Deep, narrow canyons drain to the Snake River which incise the broad volcanic plain. The Humboldt River, route of a major western pioneer trail, crosses the southern half of this area. Reaches of the Owyhee River in this area have been designated as National Wild and Scenic Rivers.

### Associated sites

R010XY005OR	<b>Loamy Bottom</b> Loamy Bottom
R025XY004OR	<b>DRY MEADOW</b> Dry Meadow
R025XY012OR	<b>LOAMY 11-13 PZ</b> Loamy 11-13" PZ

### Similar sites

R025XY008OR	<b>SILTY SWALE 13-16 PZ</b> Silty Swale 13-16" PZ (higher precipitation, different composition)
R010XY005OR	<b>Loamy Bottom</b> Loamy Bottom (higher production, extended seasonal subsurface flows)
R025XY062OR	<b>SILTY SWALE 8-11 PZ</b> Silty Swale 8-11" PZ (warmer, lower production)

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> subsp. <i>tridentata</i>
Herbaceous	(1) <i>Leymus cinereus</i> (2) <i>Leymus triticoides</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%. Elevation varies from 3,200 to 5,000 feet.

**Table 2. Representative physiographic features**

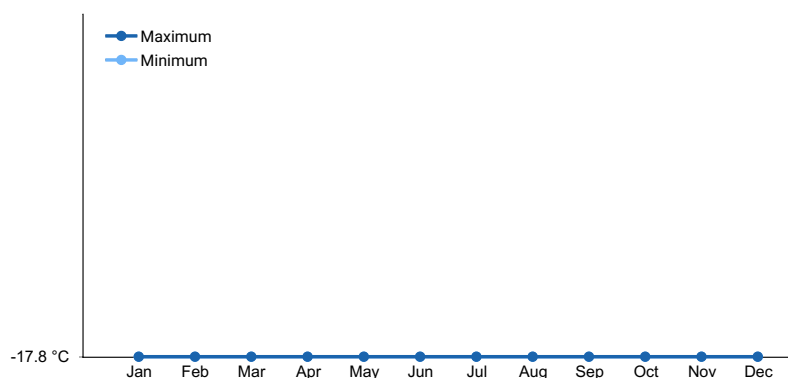
Landforms	(1) Flood plain (2) Swale
Elevation	975–1,524 m
Slope	2–12%
Aspect	Aspect is not a significant factor

## Climatic features

The annual precipitation ranges from 11 to 13 inches, most of which occurs in the form of snow during the months of November through March. Ephemeral subsurface moisture flow augments the precipitation. Localized convection storms occasionally occur during the summer. The soil temperature regime is frigid to near frigid with a mean annual air temperature of 45 degrees F. Temperature extremes range from -30 to 90 degrees F. The frost free period ranges from 30 to 90 days. The optimum growth period for native plants is from April through July.

**Table 3. Representative climatic features**

Frost-free period (average)	90 days
Freeze-free period (average)	0 days
Precipitation total (average)	330 mm



**Figure 1. Monthly average minimum and maximum temperature**

## 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 loam about 10 inches thick. The subsoil is a clay loam over 40 inches thick. The substratum varies from alluvium to bedrock. Gravel content in the pedon ranges from 0 to 30%. Permeability is moderate. The available water holding capacity 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) Loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate

Soil depth	102–178 cm
Available water capacity (0-101.6cm)	20.32–25.4 cm
Subsurface fragment volume <=3" (Depth not specified)	0–30%

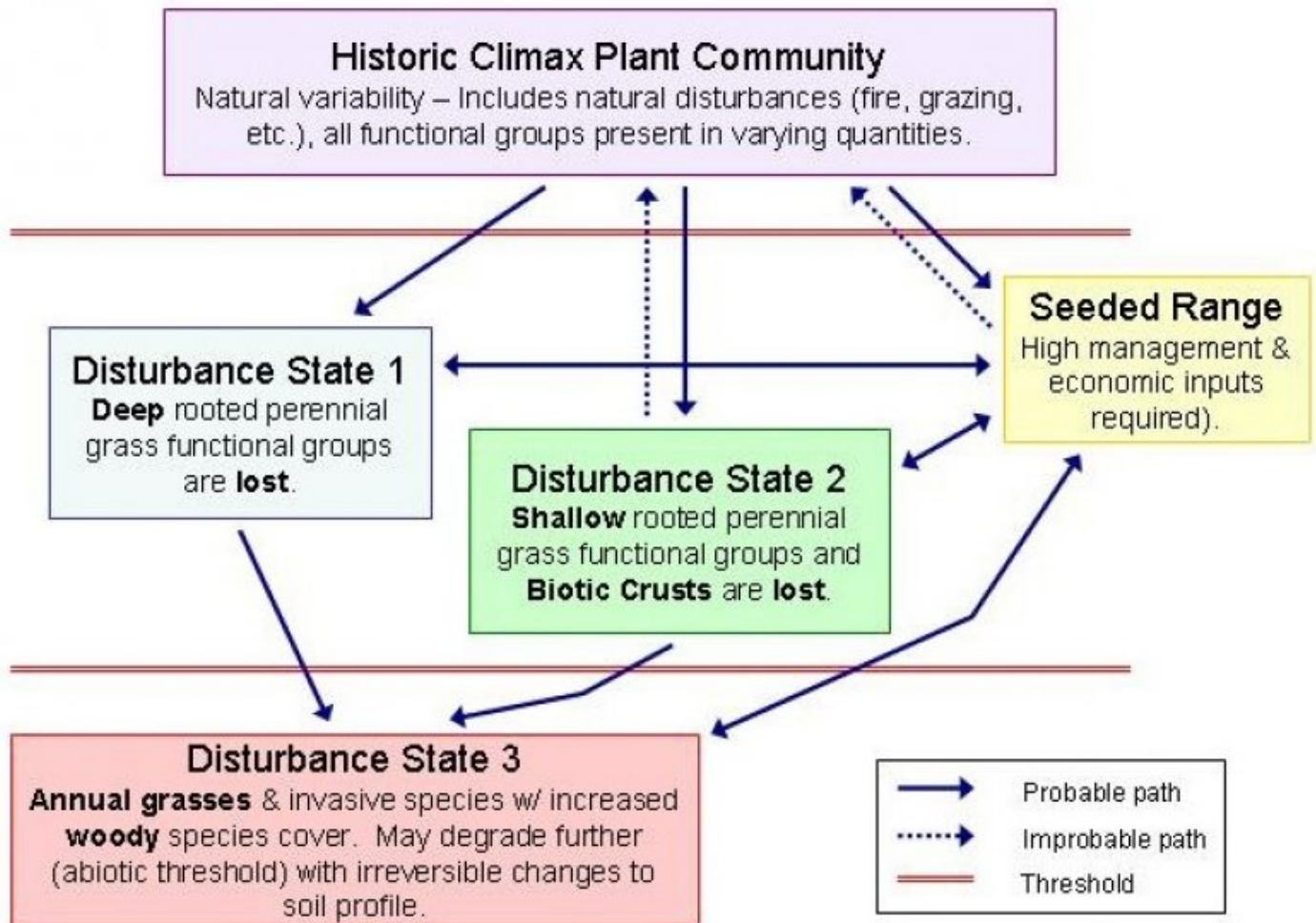
## Ecological dynamics

The potential native plant community is dominated by basin wildrye and creeping wildrye. Basin big sagebrush and bluebunch wheatgrass are present. Vegetative composition of the community is approximately 90 percent grasses, 2 percent forbs and 8 percent shrubs.

The amount of basin wildrye in relation to creeping wildrye and bluebunch wheatgrass is dependent on the extent and duration of lateral subsurface water flows. Basin wildrye increases and creeping wildrye decreases on swales receiving subsurface flows late into the growing season. This would be on swales with large drainage areas. Conversely, creeping wildrye and 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.

If the condition of the site deteriorates as a result of overgrazing, basin wildrye and bluebunch wheatgrass decreases. Basin big sagebrush, green rabbitbrush and creeping wildrye increase. Bluegrasses and annuals invade. With further deterioration annuals and shrubs increase 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



## GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

Figure 2. HCPC

### State 1 Reference State

#### Community 1.1 Reference Plant Community

The potential native plant community is dominated by basin wildrye and creeping wildrye. Basin big sagebrush and bluebunch wheatgrass are present. Vegetative composition of the community is approximately 90 percent grasses, 2 percent forbs and 8 percent shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1816	2018	2421
Shrub/Vine	161	179	215
Forb	40	45	54
<b>Total</b>	<b>2017</b>	<b>2242</b>	<b>2690</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>Dominant, perennial, deep rooted grasses</b>			1345–1569	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	1345–1569	–
2	<b>Sub-dominant, perennial, deep rooted grasses</b>			516–852	
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	448–673	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	45–112	–
	sedge	CAREX	<i>Carex</i>	22–67	–
4	<b>Sub-dominant, perennial, shallow rooted grasses</b>			45–112	
	bluegrass	POA	<i>Poa</i>	22–67	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	22–45	–
5	<b>Other perennial grasses</b>			67–269	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	11–45	–
	squirreldail	ELEL5	<i>Elymus elymoides</i>	11–45	–
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	11–45	–
	rush	JUNCU	<i>Juncus</i>	11–45	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	11–45	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	11–45	–
<b>Forb</b>					
7	<b>Dominant, perennial forbs</b>			45–90	
	buckwheat	ERIOG	<i>Eriogonum</i>	22–45	–
	lupine	LUPIN	<i>Lupinus</i>	22–45	–
9	<b>Other perennial forbs</b>			34–84	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	6–11	–
	milkvetch	ASTRA	<i>Astragalus</i>	6–11	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	6–11	–
	fleabane	ERIGE2	<i>Erigeron</i>	2–11	–
	desertparsley	LOMAT	<i>Lomatium</i>	6–11	–
	phlox	PHLOX	<i>Phlox</i>	2–6	–
	buttercup	RANUN	<i>Ranunculus</i>	2–6	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	2–6	–
	stoneseed	LITHO3	<i>Lithospermum</i>	2–6	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–6	–
<b>Shrub/Vine</b>					
11	<b>Dominant, perennial shrubs</b>			67–179	
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	45–112	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	22–67	–
15	<b>Other shrubs</b>			22–45	
	wax currant	RICE	<i>Ribes cereum</i>	11–22	–

## Animal community

This site offers food and cover for mule deer, antelope, rodents and a variety of birds. It is an important wintering area for mule deer and antelope.

## Hydrological functions

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

## Other products

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 yet, while soil moisture is adequate to allow the completion of the plant growth cycle. Improvement and/or maintenance of bank protecting vegetation should be considered during all seasons, particularly in the fall and winter for spring high flow periods.

## Other information

The soils in this site have excellent water holding capacity providing late season water for plant growth and slow water release to streams. When incised channels are present, rehabilitation will markedly improve production and restore good hydrologic characteristics. On altered sites, the reintroduction of desirable plants may be needed to fully restore the site potential.

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

## Indicators

### 1. Number and extent of rills:

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### 2. Presence of water flow patterns:

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3. **Number and height of erosional pedestals or terracettes:**
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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**
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5. **Number of gullies and erosion associated with gullies:**
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6. **Extent of wind scoured, blowouts and/or depositional areas:**
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7. **Amount of litter movement (describe size and distance expected to travel):**
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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):**
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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:**
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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):**
- 
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):**
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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):**

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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:**

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17. **Perennial plant reproductive capability:**

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