

# Ecological site R024XY645OR

## SILTY ALKALINE BOTTOM

### 8-10 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.

#### Associated sites

<b>R024XY006OR</b>	<p><b>LAKE TERRACE</b></p> <p>Lake Terrace (mildly sodic, LETR5 strongly dominant)</p>
<b>R024XY644OR</b>	<p><b>SILTY DUNES</b></p> <p>Silty Dunes (higher sodic conditions, deep silt loam, greater slopes, different composition – SAVE4 dominant, ARTRT absent to minor)</p>

#### Similar sites

<b>R024XY009OR</b>	<p><b>DRY BASIN</b></p> <p>Dry Basin (fine sandy loam over silt loam, longer available seasonal water table, higher production, different composition – ARTRT &amp; LECI4 dominant)</p>
<b>R024XY120OR</b>	<p><b>SILTY LOW SODIC TERRACE 6-10 PZ</b></p> <p>Silty Low Sodic Terrace 6-10 PZ (higher sodic conditions, loam over silty clay loam subsoil, different composition – SAVE4 dominant, ATCO &amp; GRSP prominent)</p>
<b>R024XY632OR</b>	<p><b>DRY LAKE TERRACE 6-10 PZ</b></p> <p>Dry Lake Terrace 6-10 PZ (silt loam over clayey subsoil, different composition – LECI4 absent to minor)</p>
<b>R024XY625OR</b>	<p><b>ALKALINE BASIN 8-10 PZ</b></p> <p>Alkaline Basin 8-10 PZ (higher sodic conditions, loam over a heavier subsoil, different composition - SAVE4 &amp; LECI4 dominant, DISP prominent)</p>
<b>R024XY644OR</b>	<p><b>SILTY DUNES</b></p> <p>Silty Dunes (higher sodic conditions, deep silt loam, greater slopes, different composition – SAVE4 dominant, ARTRT absent to minor)</p>

<b>R024XY112OR</b>	<b>DRY SODIC FLOODPLAIN</b>  Dry Sodic Floodplain (higher sodic conditions, gravelly loamy surface over stratified heavier subsoil, different composition - SAVE4 & DISP dominant, LETR5 minor)
<b>R024XY121OR</b>	<b>SILTY SODIC TERRACE 6-10 PZ</b>  Silty Sodic Terrace 6-10 PZ (loam over silty clay loam subsoil, different composition – GRSP prominent, LECI4 absent to minor)

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Sarcobatus vermiculatus</i> (2) <i>Artemisia tridentata ssp. tridentata</i>
Herbaceous	(1) <i>Leymus triticoides</i> (2) <i>Leymus cinereus</i>

### Physiographic features

This site typically occurs on the floors of old dry lake beds derived from volcanic ash. Slopes typically range from 0 to 2%. Elevations vary from 4,200 to 4,500 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Basin floor (2) Lakebed
Ponding duration	Brief (2 to 7 days) to very brief (4 to 48 hours)
Ponding frequency	Frequent to occasional
Elevation	1,280 – 1,370 m
Slope	0 %
Aspect	Aspect is not a significant factor

### Climatic features

The annual precipitation ranges from 6 to 10 inches, most of which occurs in the form of rain and snow during the months of December through April. An ephemeral supply of ponded and subsurface moisture augments the precipitation. The soil temperature regime is mesic to frigid near mesic with a mean air temperature of 47 degrees F. Temperature extremes range from 100 to -20 degrees F. The frost-free period ranges from 70 to 120 days. The optimum growth period for plant growth is from April to early June.

**Table 3 Representative climatic features**

Frost-free period (average)	120 days
Freeze-free period (average)	0 days
Precipitation total (average)	250 mm

**Influencing water features**

**Soil features**

The soils of this site are formed in lacustrine sediments derived from volcanic ash. They are typically fine-loamy in textured, very deep and well drained. The surface layer is an ashy silt loam over an ashy loam subsoil. Substratums are often paragravelly ashy silt loams with diatomaceous sediments. Soils are mildly sodic with pH's increasing in the subsoil. Ponding in the spring is frequent. Permeability is moderately slow. The available water holding capacity (AWC) is about 6 to 8 inches for the profile. A seasonal water table is present at 30 to greater than 60 inches. The water erosion potential is slight due to the low elevation flat position of the site. Wind erosion potential is moderate.

**Table 4. Representative soil features**

Parent material	(1) Lacustrine deposits – rhyolite
Surface texture	(1) Ashy silt loam
Family particle size	(1) Loamy
Drainage class	Well drained to moderately well drained
Permeability class	Moderately slow to slow
Soil depth	150 – 0 cm
Available water capacity (0-101.6cm)	15.24 – 20.32 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified

Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	Not specified

### Ecological dynamics

The potential native plant community is dominated by beardless wildrye (creeping). Basin wildrye is subdominant along with greasewood and basin big sagebrush. A variety of other grasses and forbs are present. Vegetative composition of the community is approximately 70 percent grasses, 5 percent forbs and 25 percent shrubs. The approximate ground cover is 60 to 70 percent (basal and crown).

#### Range in Characteristics:

Production increases with increasing available subsurface moisture and in areas with decreasing alkalinity. Beardless wildrye increases in areas with finer surface textures and lower surface alkalinity. Basin wildrye increases in areas with greater available subsurface moisture. Greasewood increases in areas with higher alkalinity and basin big sagebrush increases with decreasing alkaline conditions. Areas with greater amounts of saltgrass are transitional to other sites. Higher salt concentrations reduce plant growth and inhibits seedling emergence.

#### Response to Disturbance - States:

When the condition of the site deteriorates as a result of over grazing basin wildrye will decrease. Beardless wildrye, bottlebrush squirreltail, greasewood and basin big sagebrush will increase. With further deterioration shrubs continue to increase, creeping wild rye decreases, annuals invade sparingly and areas of bare ground increase. As bare soil increases, soil surface conditions become increasingly sodic and saltgrass increases. Production decreases and site deterioration continues to occur in a cyclic pattern.

States: SAVE4-ARTRT/LETR5-bare ground;  
SAVE4/DISP-LETR5-bare ground

### 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 (%)
<b>Grass/Grasslike</b>					
1	<b>Dominant, moderately rooted, rhizomatous grass</b>			235-471	
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	235-471	–
2	<b>Sub-dominant, deep rooted bunchgrass</b>			78-235	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	78-235	–
3	<b>Other perennial grasses</b>			16-55	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	16-39	–
	saltgrass	DISP	<i>Distichlis spicata</i>	0-16	–
<b>Forb</b>					
4	<b>Perennial forbs</b>			31-47	
	milkvetch	ASTRA	<i>Astragalus</i>	16-24	–
	salt heliotrope	HECU3	<i>Heliotropium curassavicum</i>	16-24	–
<b>Shrub/Vine</b>					
5	<b>Dominant, deciduous, non-sprouting shrub</b>			78-118	
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	78-118	–
6	<b>Co-dominant, evergreen, non-sprouting shrub</b>			78-118	

	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	78-118	-
7	<b>Other shrubs</b>			8-39	
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	8-39	-

### Animal community

Livestock Grazing: This site is suitable for livestock grazing use in the late spring 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 basin wildrye. Deferred grazing or rest is recommended at least once every three years. Wildlife: This site is used by pronghorn antelope, mule deer, rabbits, rodents, upland birds and various predators. It provides good visibility and limited forage for antelope.

### Hydrological functions

The soils of this site are typically in or near the lowest topographic position. It accumulates off-site surface flows and when ponded has virtually no runoff potential. The soils have medium infiltration rates when vegetation cover is high. Hydrologic cover is high when the basin wildrye and beardless wildrye component is greater than 70 percent of potential. The soils are in hydrologic group C.

### Other information

This site can be difficult to reseed when in poor soil condition. Salt concentrations can reduce germination of basin wildrye and creeping wildrye. Beardless wildrye has limited seed availability. Soils are corrosive to steel.

### 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):

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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):

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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:

Sub-dominant:

Other:

Additional:

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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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