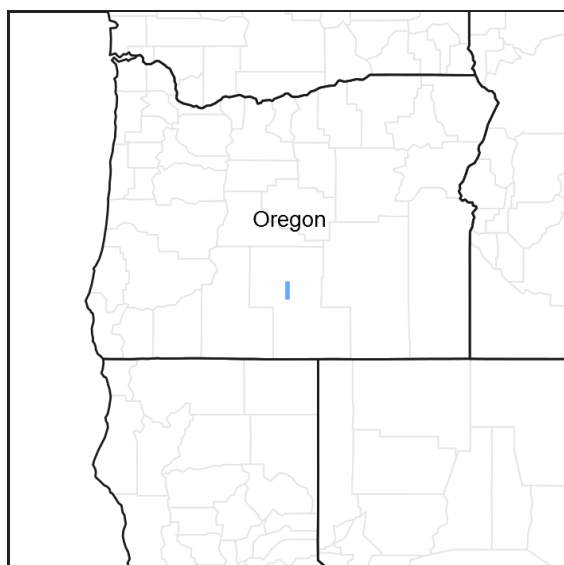


## **Ecological site R024XY640OR** **STONY ALKALINE SLOPES 6-10 PZ**

Accessed: 05/15/2024

### 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

R024XY016OR	<b>LOAMY 8-10 PZ</b> Loamy 8-10 PZ (non-aspect, lower salts and carbonates, different composition – ARTRW8 and ACTH7 dominant, PSSPS prominent, SAVE4 absent)
R024XY030OR	<b>LOAMY SLOPES 6-10 PZ</b> Loamy Slopes 6-10 PZ (lower salts and carbonates, different composition – ARTRW8 and ACHY dominant w/GRSP and ACTH7 present)
R024XY032OR	<b>ARID SOUTH SLOPES 6-10 PZ</b> Arid South Slopes 6-10 PZ (shallower soil, lower salts and carbonates, lower production, warmer south slope, different composition – ARTRW8 and ACHY dominant w/ACTH7 common, SADO4 and PSSPS present)
R024XY113OR	<b>SODIC FAN 6-10 PZ</b> Sodic Fan 6-10 PZ (fan position, very deep sandy loam, different composition – ARTRT and ACHY dominant, LECI4 and SAVE4 common)
R024XY634OR	<b>SODIC SOUTH SLOPES 8-10 PZ</b> Sodic South Slopes 8-10 PZ (higher production, cooler south slope, different composition – ARTRW8 and ACHY dominant, SAVE4 co-dominant)
R024XY638OR	<b>SOUTH SLOPES 8-10 PZ</b> South Slopes 8-10 PZ (lower salts and carbonates, higher production, different composition – ARTRW8 and PSSPS dominant w/ACTH7 near dominant and SAVE4 absent)

## Similar sites

R024XY030OR	<b>LOAMY SLOPES 6-10 PZ</b> Loamy Slopes 6-10 PZ (lower salts and carbonates, different composition – ARTRW8 and ACHY dominant w/GRSP and ACTH7 present)
R024XY638OR	<b>SOUTH SLOPES 8-10 PZ</b> South Slopes 8-10 PZ (lower salts and carbonates, higher production, different composition – ARTRW8 and PSSPS dominant w/ACTH7 near dominant and SAVE4 absent)
R024XY032OR	<b>ARID SOUTH SLOPES 6-10 PZ</b> Arid South Slopes 6-10 PZ (shallower soil, lower salts and carbonates, lower production, warmer south slope, different composition – ARTRW8 and ACHY dominant w/ACTH7 common, SADO4 and PSSPS present)
R024XY031OR	<b>DROUGHTY SHALLOW SLOPES 6-10 PZ</b> Droughty Shallow Slopes 6-10 PZ (lower production, warmer slopes, different composition – ATCO dominant)
R024XY634OR	<b>SODIC SOUTH SLOPES 8-10 PZ</b> Sodic South Slopes 8-10 PZ (higher production, cooler south slope, different composition – ARTRW8 and ACHY dominant, SAVE4 co-dominant)
R024XY113OR	<b>SODIC FAN 6-10 PZ</b> Sodic Fan 6-10 PZ (fan position, very deep sandy loam, different composition – ARTRT and ACHY dominant, LECI4 and SAVE4 common)
R024XY637OR	<b>SODIC NORTH SLOPES 8-10 PZ</b> Sodic North Slopes 8-10 PZ (higher production, cooler north slope, different composition – ARTRW8 and PSSPS dominant w/SAVE4 common)

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Sarcobatus vermiculatus</i> (2) <i>Atriplex confertifolia</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i> (2) <i>Hesperostipa comata</i>

## Physiographic features

This site occurs on southwest facing aspects of terraces and hills adjacent to alkaline lake basins. Slopes typically range from 15 to 30%. Elevation varies from 4000 to 4800 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Terrace (2) Hill (3) Fan remnant
Elevation	1,219–1,463 m
Slope	15–30%
Aspect	S, SW

## 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 March. The soil temperature regime is mesic with a mean air temperature of 48 degrees F. Temperature extremes range from 110 to -20 degrees F. The frost free period ranges from 80 to 110 days. The optimum growth period for plant growth is from April through early June.

**Table 3. Representative climatic features**

Frost-free period (average)	95 days
Freeze-free period (average)	0 days
Precipitation total (average)	203 mm

## Influencing water features

### Soil features

The soils of this site are typically shallow to moderately deep over alluvial and lacustrine sediments or bedrock. Soils are sodium affected with a loam to sandy loam surface texture over a loam to clay loam subsoil. Cobbles and gravels are common throughout. A desert pavement is common. Permeability is moderate. The available water holding capacity (AWC) is about 4 to 6 inches for the profile. The potential for erosion is moderate.

**Table 4. Representative soil features**

Parent material	(1) Eolian deposits–rhyolite
Surface texture	(1) Very cobbly loam (2) Gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained
Permeability class	Moderate
Soil depth	25–102 cm
Available water capacity (0-101.6cm)	10.16–15.24 cm
Calcium carbonate equivalent (0-101.6cm)	2%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	7

## Ecological dynamics

The potential native plant community is dominated by greasewood and Indian ricegrass. Shadscale saltbush and needle and thread are common. Thurber's needlegrass, Sandberg bluegrass, bottlebrush squirreltail, a variety of forbs and other salt desert shrubs are present. Vegetative composition of the community is approximately 50 percent grasses, 5 percent forbs and 45 percent shrubs. The approximate ground cover is 50 to 60 percent (basal and crown).

### Range in Characteristics:

The depth to a restrictive layer and aspect influences the composition and production of the site. Production will increase with greater soil depth and at the upper end of the precipitation zone. Indian ricegrass, needlegrasses and sand dropseed increase on coarser surfaces and on droughty slopes. Greasewood, shadscale saltbush and other salt tolerant shrubs increase in areas with higher sodic conditions. Basin wildrye increases with increased available sub-surface moisture. Bluebunch wheatgrass increases on a silty surface. On older stable higher terraces an erosion pavement has accumulated with a distinctive desert varnish. The distinctive dark color is due to precipitated concentrates of manganese and lesser amounts of iron.

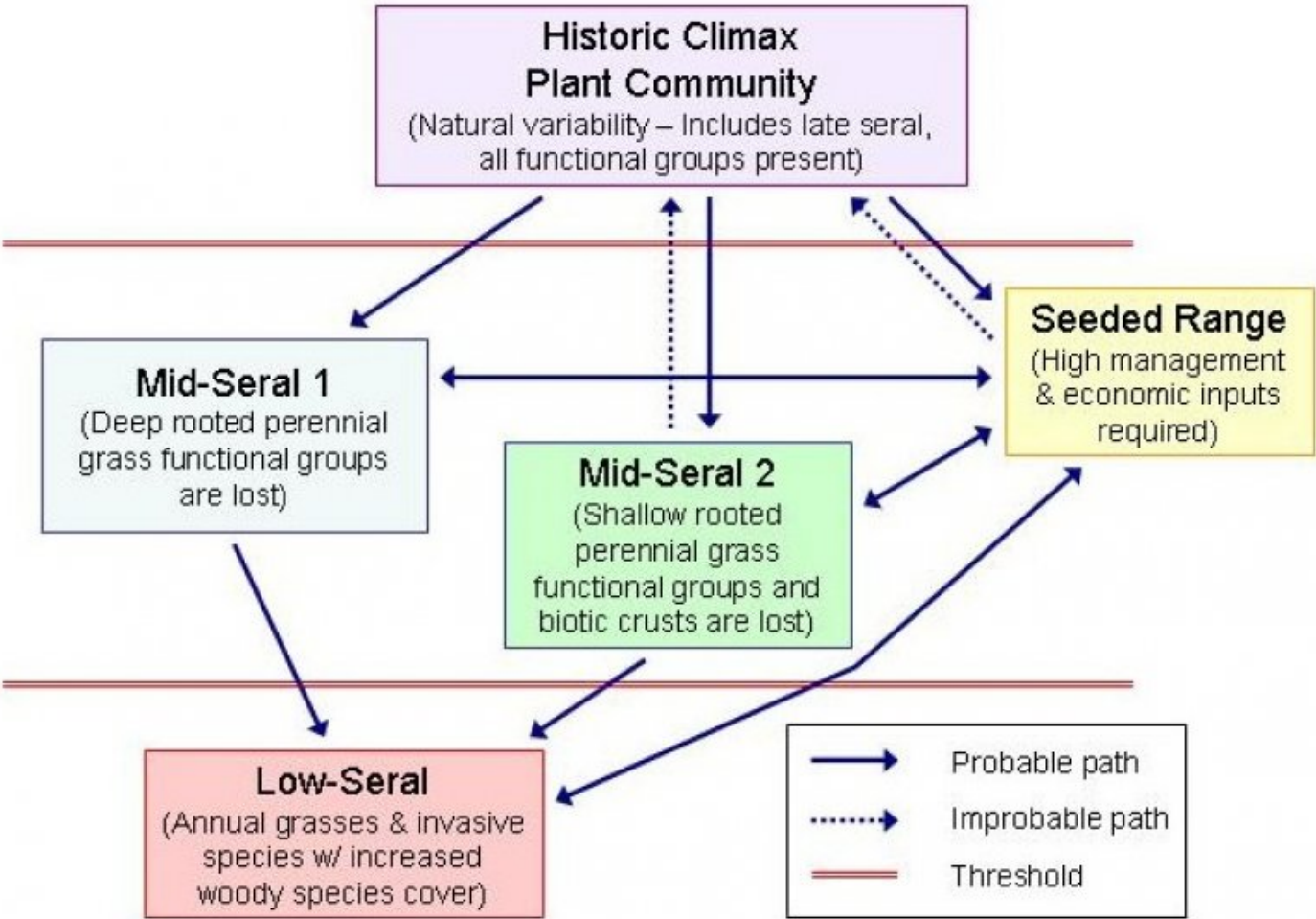
### Response to Disturbance - States

If the condition of the site deteriorates as a result of over grazing, Indian ricegrass, needlegrasses and bud

sagebrush will decrease in the stand. Greasewood, shadscale saltbush, horsebrush, spiny hopsage and squirreltail will increase. Annuals will invade sparingly. With further deterioration, shadscale saltbush, spiny hopsage and squirreltail will decrease. Bare ground increases. erosion accelerates and site productivity decreases. The invasion of annuals and the natural re-establishment of native perennials are limited on eroded surfaces and in areas of dense cobbles and heavy erosion pavement.

States: SAVE4-ATCO/ELEL5-annuals, bare ground with erosion pavement

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGE

State 1  
Reference Plant Community

Community 1.1  
Reference Plant Community

The reference native plant community is dominated by greasewood and Indian ricegrass. Shadscale saltbush and needle and thread are common. Thurber’s needlegrass, Sandberg bluegrass, bottlebrush squirreltail, a variety of forbs and other salt desert shrubs are present. Vegetative composition of the community is approximately 50 percent grasses, 5 percent forbs and 45 percent shrubs. The approximate ground cover is 50 to 60 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	168	280	392
Shrub/Vine	151	252	353
Forb	17	28	39
<b>Total</b>	<b>336</b>	<b>560</b>	<b>784</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, moderate rooted bunchgrass</b>			112–168	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	112–168	–
2	<b>Sub-dominant, moderate rooted bunchgrass</b>			28–84	
	needle and thread	HECO26	<i>Hesperostipa comata</i>	28–84	–
3	<b>Common, moderate rooted bunchgrasses</b>			22–84	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	11–28	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	0–28	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	11–28	–
4	<b>Other perennial grasses</b>			22–67	
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	118–157	–
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	20–59	–
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	20–39	–
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	4–20	–
	shortspine horsebrush	TESP2	<i>Tetradymia spinosa</i>	4–20	–
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	6–17	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	6–17	–
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	6–11	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	6–11	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	0–8	–
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	0–8	–
	foxtail wheatgrass	PSSA2	× <i>Pseudelymus saxicola</i>	0–6	–
	Webber needlegrass	ACWE3	<i>Achnatherum webberi</i>	0–6	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	0–4	–
<b>Forb</b>					
5	<b>Perennial forbs</b>			22–56	
	buckwheat	ERIOG	<i>Eriogonum</i>	6–11	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	0–6	–
	phlox	PHLOX	<i>Phlox</i>	2–6	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	2–6	–
	milkvetch	ASTRA	<i>Astragalus</i>	2–6	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	2–6	–

	Indian paintbrush	CAST12	<i>Castilleja</i>	0–3	–
	Douglas' dustymaiden	CHDO	<i>Chaenactis douglasii</i>	0–3	–
	nodding thelypody	THFL3	<i>Thelypodium flexuosum</i>	0–2	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–2	–
	evening primrose	OENOT	<i>Oenothera</i>	0–2	–
<b>Shrub/Vine</b>					
6	<b>Dominant, deciduous, non-sprouting shrub</b>			84–140	
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	84–140	–
7	<b>Subdominant, deciduous, non-sprouting shrub</b>			28–84	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	28–84	–
8	<b>Common, deciduous, sprouting shrub</b>			28–56	
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	28–56	–
9	<b>Other shrubs</b>			28–56	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	6–17	–
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	6–17	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	6–11	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	0–11	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0–6	–
	shortspine horsebrush	TESP2	<i>Tetradymia spinosa</i>	0–6	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	0–6	–

## Animal community

### Livestock Grazing:

This site is suitable for livestock grazing use in the late spring and fall and winter under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Care should be taken to avoid plant crown damage and soil movement when the soils are wet. Grazing management should be keyed to Indian ricegrass and needlegrasses. Deferred grazing or rest is recommended at least once every three years.

### Wildlife:

This site offers food and cover for mule deer, antelope, desert bighorn sheep and a variety of birds, rodents and associated predators. It is an important spring, fall and winter use area for mule deer, antelope and desert bighorn sheep.

## Hydrological functions

The soils of this site have a moderate to high runoff potential. Hydrologic cover is good when the Indian ricegrass and needlegrass component is greater than 70 percent of potential. The soils are in hydrologic group C.

## Other information

This site has limited potential for range seeding due to steepness and a usual stony surface. Extended drought can inhibit germination and establishment of available species.

## 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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