

Ecological site R029XY004NV SALINE BOTTOM

Accessed: 05/06/2024

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.

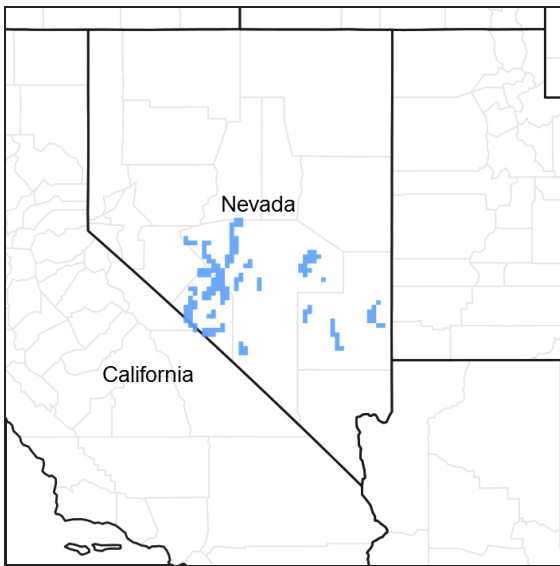


Figure 1. Mapped extent

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

R029XY002NV	SALINE MEADOW
R029XY018NV	SODIC DUNE
R029XY024NV	SODIC TERRACE 5-8 P.Z.
R029XY076NV	SODIC FLAT
R029XY087NV	GRAVELLY LOAM 5-8 P.Z.

Similar sites

R029XY002NV	SALINE MEADOW More productive site
R029XY003NV	LOAMY BOTTOM 8-12 P.Z. SAVE4 and DISP absent; soils not saline-alkali; more productive site
R029XY024NV	SODIC TERRACE 5-8 P.Z. ATCO-SAVE4 codominant; less productive site
R029XY091NV	SODIC TERRACE 8-10 P.Z. SAVE4-ARTR2 codominant; less productive site

R029XY076NV	SODIC FLAT Less productive site
R029XY093NV	DEEP SODIC FAN ATTO dominant shrub
R029XY154NV	DRY SALINE MEADOW LECI4 rare to minor grass

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Sarcobatus vermiculatus</i>
Herbaceous	(1) <i>Leymus cinereus</i> (2) <i>Sporobolus airoides</i>

Physiographic features

This site occurs on alluvial flats, lake plains, and axial stream floodplains. Slopes range from 0 to 4 percent. Elevations are 3000 to 5500 feet.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Lake plain (3) Flood plain
Elevation	914–1,676 m
Slope	0–4%
Water table depth	51–152 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is semiarid, characterized by cold, moist winters and warm, somewhat dry summers. Average annual precipitation is (3)4 to about 8 inches. Mean annual air temperature is 50 to 64 degrees F. The average growing season is about 170 to 240 days.

Table 3. Representative climatic features

Frost-free period (average)	240 days
Freeze-free period (average)	0 days
Precipitation total (average)	203 mm

Influencing water features

This site is associated with perennial streams. This site receives additional moisture from flooding during spring runoff and from runoff in higher landscapes.

Soil features

The soils that characterize this site have formed in mixed alluvium and are usually deep to very deep. Surface soils are less than 10 inches thick and are medium to moderately-fine textured. These soils are normally strongly salt and sodium-affected in their upper profile with soil reaction and salt and sodium usually decreasing with depth. The soils are mostly somewhat poorly to poorly drained and have a seasonally high water table at depths of 20 to 60 inches. Additional moisture is received on this site during the winter and early spring months as run-in from higher

landscapes or by occasional brief overflow from adjacent streams. Wetting of these soils dilutes their salt and sodium concentrations and the degree of salinity and alkalinity may fluctuate widely through the year.

Ecological dynamics

Where management results in abusive livestock use, black greasewood and rabbitbrush increase, while basin wildrye and alkali sacaton decrease. With further degradation, rabbitbrush typically becomes the dominant species. Species likely to invade this site are thistles and annual forbs.

Fire Ecology:

Black greasewood communities have been historically subject to stand-replacing fire regimes with intervals of <100 years. Black greasewood may be killed by severe fires, but it commonly sprouts soon after low to moderate-severity fires. Alkali rabbitbrush is often top-killed by fire. It is a fire adapted species that establishes itself rapidly following fire. Rubber rabbitbrush is often top-killed by fire. Rubber rabbitbrush is a fire-adapted species that is typically unharmed or enhanced by fire. Recovery time is often rapid to very rapid. Rubber rabbitbrush is often one of the first species to colonize burned areas by sprouting or from off-site seed. Alkali sacaton is classified as tolerant of, but not resistant to, fire. Top-killing by fire is probably frequent, and the plants can be killed by severe fire. Basin wildrye is top-killed by fire. Older basin wildrye plants with large proportions of dead material within the perennial crown can be expected to show higher mortality due to fire than younger plants having little debris. Basin wildrye is generally tolerant of fire but may be damaged by early season fire combined with dry soil conditions. Saltgrass rhizomes occur deep in the soil where they are insulated from the heat of most fires. Saltgrass survives fire by sending up new growth from rhizomes.

State and transition model

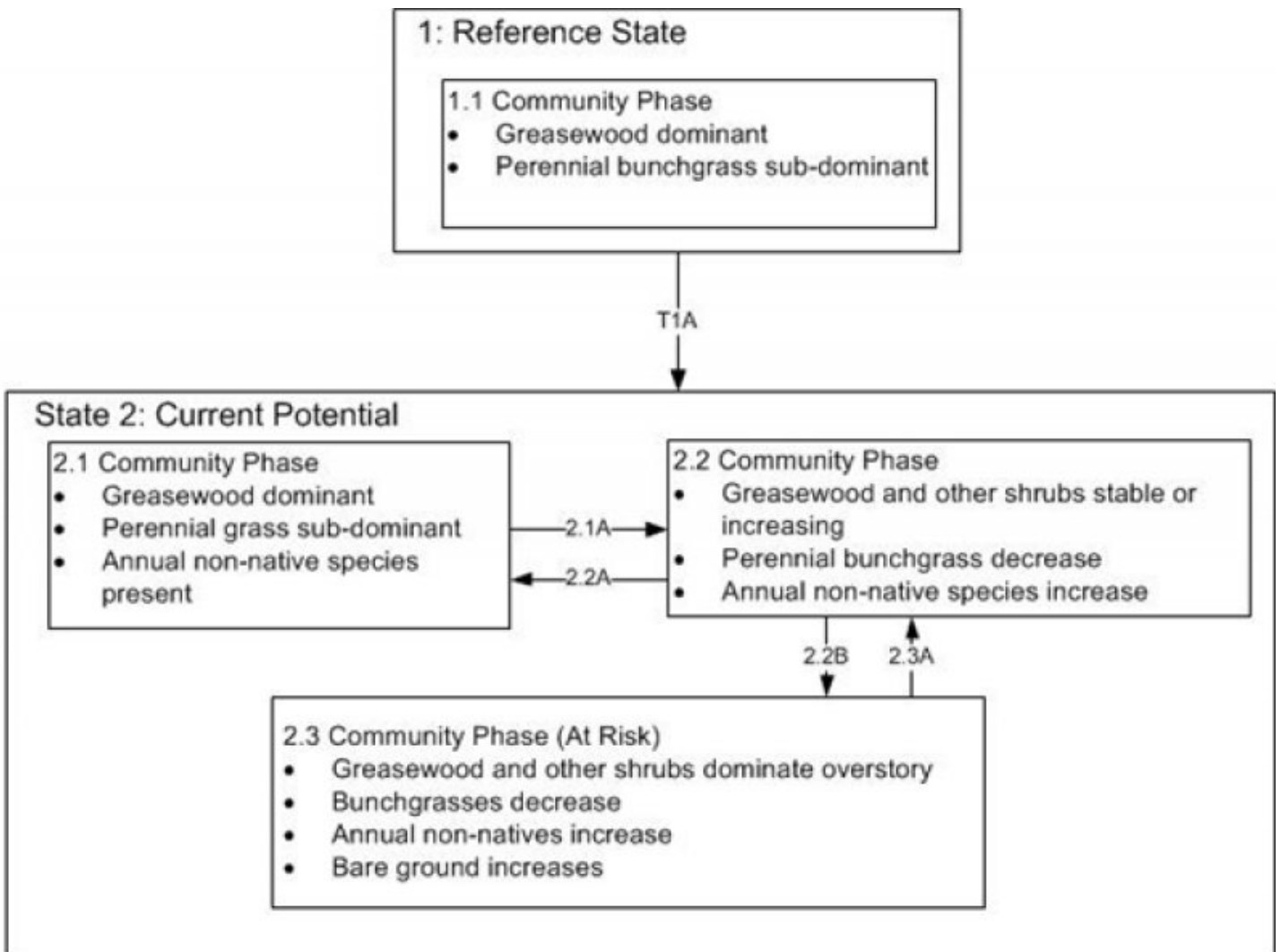


Figure 3. DRAFT STM

T1A: introduction of non-native species

2.1A: prolonged drought/ inadequate rest and recovery from defoliation

2.2A: rest and recovery

2.2B: prolonged drought/ inadequate rest and recovery from defoliation

2.3A: recovery or changes in management

Figure 4. DRAFT STM LEGEND

State 1

Reference State

Community 1.1

Reference Plant Community

The reference plant community is dominated by basin wildrye, alkali sacaton, and black greasewood. Potential vegetative composition is about 75% grasses, 5% forbs and 20% shrubs. Approximate ground cover (basal and crown) is 40 to 60 percent.

Table 4. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	673	1093	1513
Shrub/Vine	179	291	404
Forb	45	73	101
Total	897	1457	2018

State 2

Current Potential State

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			831–1457	
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	510–729	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	291–583	–
	saltgrass	DISP	<i>Distichlis spicata</i>	29–146	–
2	Secondary Perennial Grasses/Grasslikes			29–146	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	8–44	–
	common reed	PHAU7	<i>Phragmites australis</i>	8–44	–
	alkaligrass	PUCCI	<i>Puccinellia</i>	8–44	–
Forb					
3	Perennial			29–117	
	saltgrass	DISP	<i>Distichlis spicata</i>	29–146	–
	thelypody	THELY	<i>Thelypodium</i>	8–29	–
Shrub/Vine					
4	Primary Shrubs			73–364	
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	73–219	–
	whiteflower rabbitbrush	CHAL9	<i>Chrysothamnus albidus</i>	0–73	–
	rubber rabbitbrush	ERNAN5	<i>Ericameria nauseosa ssp. nauseosa var. nauseosa</i>	0–73	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	7–29	–
5	Secondary Shrubs			29–117	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	6–29	–
	alkaligrass	PUCCI	<i>Puccinellia</i>	6–29	–
	iodinebush	ALOC2	<i>Allenrolfea occidentalis</i>	8–29	–
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	8–29	–
	Parry's saltbush	ATPA3	<i>Atriplex parryi</i>	8–29	–
	Torrey's saltbush	ATTO	<i>Atriplex torreyi</i>	8–29	–
	seepweed	SUAED	<i>Suaeda</i>	8–29	–

Animal community

Livestock Interpretations:

This site is suitable for grazing by livestock. Grazing management should be keyed to alkali sacaton, basin wildrye and other perennial grass species. Alkali sacaton is a valuable forage species in arid and semiarid regions. Plants are tolerant to moderate grazing and can produce abundant herbage utilized by livestock. The early growth and abundant production of basin wildrye make it a valuable source of forage for livestock. It is important forage for cattle and is readily grazed by cattle and horses in early spring and fall. Though coarse-textured during the winter, basin wildrye may be utilized more frequently by livestock and wildlife when snow has covered low shrubs and other grasses. Saltgrass's value as forage depends primarily on the relative availability of other grasses of higher nutritional value and palatability. It can be an especially important late summer grass in arid environments after other forage grasses have deceased. Saltgrass is rated as a fair to good forage species only because it stays green after most other grasses dry. Livestock generally avoid saltgrass due to its coarse foliage. Saltgrass is described as an "increaser" under grazing pressure. Black greasewood is an important winter browse plant for

domestic sheep and cattle. It also receives light to moderate use by domestic sheep and cattle during spring and summer months. Black greasewood contains soluble sodium and potassium oxalates that may cause poisoning and death in domestic sheep and cattle if large amounts are consumed in a short time. In general, livestock forage only lightly on rabbitbrush during the summer, but winter use can be heavy in some locations. Fall use is variable, but flowers are often used by livestock. A few leaves and the more tender stems may also be used.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management through the year and from year to year.

Wildlife Interpretations:

Black greasewood is an important winter browse plant for big game animals and a food source for many other wildlife species. It also receives light to moderate use by mule deer and pronghorn during spring and summer months. Wildlife forage only lightly on rabbitbrush during the summer, but winter use can be heavy in some locations. Fall use is variable, but flowers are often used by wildlife. A few leaves and the more tender stems may also be used. The forage value of rabbitbrush varies greatly among subspecies and ecotypes. The western salt desert shrub and grassland communities where alkali sacaton is common support an abundance of mule deer, pronghorn, carnivores, small mammals, birds, amphibians, and reptiles. Basin wildrye provides winter forage for mule deer, though use is often low compared to other native grasses. Basin wildrye provides summer forage for black-tailed jackrabbits. Because basin wildrye remains green throughout early summer, it remains available for small mammal forage for longer time than other grasses. Saltgrass provides cover for a variety of bird species, small mammals, and arthropods and is on occasion used as forage for several big game wildlife species.

Hydrological functions

There are no rills, pedestals, or terracettes. Water flow patterns are rare to common. Moderately fine to fine surface textures result in limited infiltration rates. Concentrations of surface salts and sodium result in chemical crusts which also impedes infiltration. Water flow patterns are typically short, ending in depressional areas.

Gullies are none to common depending on landform. Where this site occurs on landforms not associated with ephemeral or perennial drainageways, gullies do not occur. Where this site occurs associated with drainageways, gullies may occur. Gullies and associated head cuts should be healing and stable. Deep-rooted perennial bunchgrasses (basin wildrye and alkali sacaton) slow runoff and increase infiltration. Tall stature and relatively coarse foliage of basin wildrye and associated litter break raindrop impact and provide opportunity for snow catch and moisture accumulation on site.

Recreational uses

Aesthetic value is derived from the diverse floral and faunal composition and the colorful flowering of wild flowers and shrubs during the spring and summer.

Other products

The leaves, seeds and stems of black greasewood are edible. Basin wildrye was used as bedding for various Native American ceremonies, providing a cool place for dancers to stand.

Other information

Black greasewood is useful for stabilizing soil on wind-blown areas. It successfully revegetates eroded areas and sites too saline for most plant species. Alkali sacaton is one of the most commonly used species for seeding and stabilizing disturbed lands. Due to alkali sacaton's salt tolerance, is recommended for native grass seeding on subirrigated saline sites. Basin wildrye is useful in mine reclamation, fire rehabilitation and stabilizing disturbed areas. Its usefulness in range seeding, however, may be limited by initially weak stand establishment. Given its extensive system of rhizomes and roots which form a dense sod, saltgrass is considered a suitable species for controlling wind and water erosion.

Type locality

Location 1: Esmeralda County, NV	
Township/Range/Section	T1S R36E S16
General legal description	Fish Lake Valley, Esmeralda County, Nevada.
Location 2: Esmeralda County, NV	
Township/Range/Section	T2S R36E S3
General legal description	Fish Lake Valley, Esmeralda County, Nevada.
Location 3: Nye County, NV	
Township/Range/Section	T3N R39E S1
General legal description	Big Smokey Valley, Nye County, Nevada.
Location 4: Lincoln County, NV	
Township/Range/Section	T5S R60E S10
General legal description	Pahranagat Valley, Lincoln County, Nevada.

Other references

Fire Effect Information System (Online; <http://www.fs.fed.us/database/feis/plants/>).

USDA-NRCS Plants Database (Online; <http://www.plants.usda.gov>).

Contributors

HA/GD

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)	GK BRACKLEY
Contact for lead author	State Rangeland Management Specialist
Date	06/20/2006
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None
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2. **Presence of water flow patterns:** Water flow patterns are rare to common. Moderately fine to fine surface textures result in limited infiltration rates. Concentrations of surface salts and sodium result in chemical crusts which also impedes infiltration. Water flow patterns are typically short, ending in depressional areas.
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3. **Number and height of erosional pedestals or terracettes:** None
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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground \pm 65%; surface rock fragments less than 5%; shrub canopy \pm 10%; basal area for perennial herbaceous plants \pm 20%.
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5. **Number of gullies and erosion associated with gullies:** Gullies are none to common depending on landform. Where this site occurs on landforms not associated with ephemeral or perennial drainageways, gullies do not occur. Where this site occurs associated with drainageways, gullies may occur. Gullies and associated head cuts should be healing and stable.
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6. **Extent of wind scoured, blowouts and/or depositional areas:** None
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7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage of grasses and annual & perennial forbs) is only expected to move during periods of flooding by adjacent streams. Where present, this site typically occurs on the outer margins of active floodplains and persistent litter (large woody material) will remain in place except during major flooding events.
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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):** Soil stability values will range from 1 to 4. (To be field tested.)
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Structure of soil surface will be platy or massive. Soil surface colors are light and are typified by an ochric epipedon. Organic carbon can range from 1.5 to 4.5 percent (OM values taken from lab characterization data.)
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Deep-rooted perennial bunchgrasses (basin wildrye and alkali sacaton) slow runoff and increase infiltration. Tall stature and relatively coarse foliage of basin wildrye and associated litter break raindrop impact and provide opportunity for snow catch and moisture accumulation on site.
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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):** Compacted layers are not typical. Platy or massive subsurface layers are normal for this site and are not to be interpreted as compaction.
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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: Reference Plant Community: Tall-statured, deep-rooted, cool season, perennial bunchgrasses > perennial rhizomatous grasses > associated perennial grasses and grass-like plants > tall shrubs. (By above ground production)

Sub-dominant: Deep-rooted, perennial forbs = fibrous, shallow-rooted, cool season, perennial and annual forbs. (By above ground production)

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs are common and standing dead shrub canopy material may be as much as 25% of total woody canopy.
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14. **Average percent litter cover (%) and depth (in):** Within plant interspaces ($\pm 35\%$) and depth of litter $\pm \frac{1}{2}$ inch.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** For normal or average growing season (through June) ± 1300 lbs/ac; Winter moisture significantly affects total 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:** Rubber rabbitbrush (aggressive increaser spp.); annual mustards; povertyweed; annual kochia; pigweed; knapweeds
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years.
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