

Ecological site R029XY093NV DEEP SODIC FAN

Accessed: 05/07/2024

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.

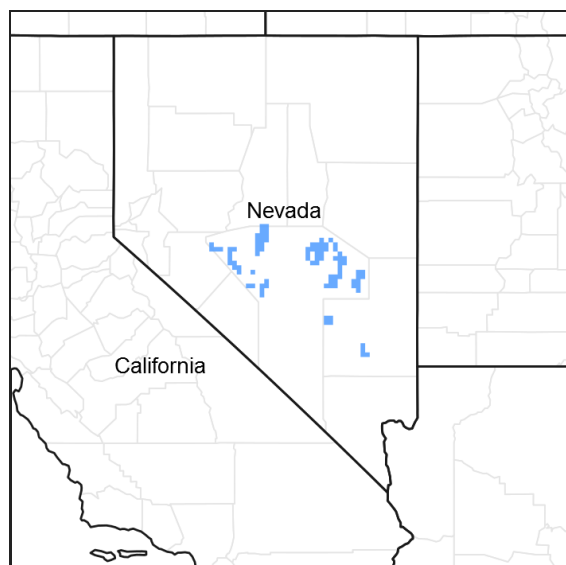


Figure 1. Mapped extent

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
R029XY004NV	SALINE BOTTOM
R029XY024NV	SODIC TERRACE 5-8 P.Z.
R029XY091NV	SODIC TERRACE 8-10 P.Z.
R029XY094NV	SODIC FLOODPLAIN
R029XY153NV	SODIC SANDS
R029XY154NV	DRY SALINE MEADOW
R029XY156NV	DRY FLOODPLAIN

Similar sites

R029XY153NV	SODIC SANDS SAVE4 dominant shrub; ATTO minor shrub
R029XY004NV	SALINE BOTTOM ARTR2 rare to absent; ATTO minor shrub, if present; more productive site

R029XY018NV	SODIC DUNE SAVE4 dominant shrub; ATTO minor shrub
R029XY091NV	SODIC TERRACE 8-10 P.Z. SAVE4-ARTR2 codominant
R029XY156NV	DRY FLOODPLAIN ARTR2 dominant shrub; ATTO minor shrub, if present

Table 1. Dominant plant species

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

Physiographic features

This site occurs on inset fans and axial stream floodplains. Slopes range from 0 to 4 percent, but slope gradients of 0 to 2 is typical. Elevation is 3500 to about 6500 feet.

Table 2. Representative physiographic features

Landforms	(1) Inset fan (2) Stream terrace (3) Flood plain
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional
Ponding frequency	Occasional
Elevation	1,067–1,981 m
Slope	0–4%
Aspect	Aspect is not a significant factor

Climatic features

The climate associated with this site is arid, characterized by cool, moist winters and hot, dry summers. Average annual precipitation is 6 to 10 inches. Mean annual air temperature is 47 to 52 degrees F. The average growing season is about 90 to 120 days.

Table 3. Representative climatic features

Frost-free period (average)	120 days
Freeze-free period (average)	0 days
Precipitation total (average)	254 mm

Influencing water features

This site normally receives additional moisture from flooding or as run-in from higher landscapes. A stable water table within 6 to 8 feet of the surface provides extra moisture to deep-rooted plants.

Soil features

The soils of this site are very deep and well drained. They are formed in alluvium from lacustrine sediments. These soils are moderately to strongly salt and sodium affected. Soil reaction decreases with soil depth. This site normally receives additional moisture from flooding or as run-in from higher landscapes. A stable water table within 6 to 8

feet of the surface provides extra moisture to deep-rooted plants. Runoff is high but there is no widespread ponding. Potential for sheet and rill erosion is slight. The soil series associated with this site is Slaw.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Silty clay loam (3) Gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow
Soil depth	183–213 cm
Surface fragment cover ≤3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	18.54–20.07 cm
Calcium carbonate equivalent (0-101.6cm)	1–4%
Electrical conductivity (0-101.6cm)	8–32 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	13–99
Soil reaction (1:1 water) (0-101.6cm)	8.5–9.6
Subsurface fragment volume ≤3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Where management results in abusive grazing use by cattle and/or feral horses, basin wildrye and other perennial grasses decrease in productivity and density as canopy cover and density of Torrey's quailbush, rubber rabbitbrush and black greasewood increase. Cheatgrass and annual forbs such as mustards and Russian thistle are species likely to invade this site.

Fire Ecology:

Grassland communities with a basin wildrye component historically experienced mostly infrequent to frequent stand replacing fires. Grassland vegetation types experienced both short fire intervals of less than 35 years as well as intervals ranging from 35 to 100 years, depending on climate and ignition sources. Torrey's quailbush has been shown to have reduced flammability due to high moisture and ash contents. Torrey's quailbush can survive at least some fires. The limited information available suggests that the most likely postfire regeneration strategy of Torrey's quailbush is seed production. 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. 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.

State and transition model

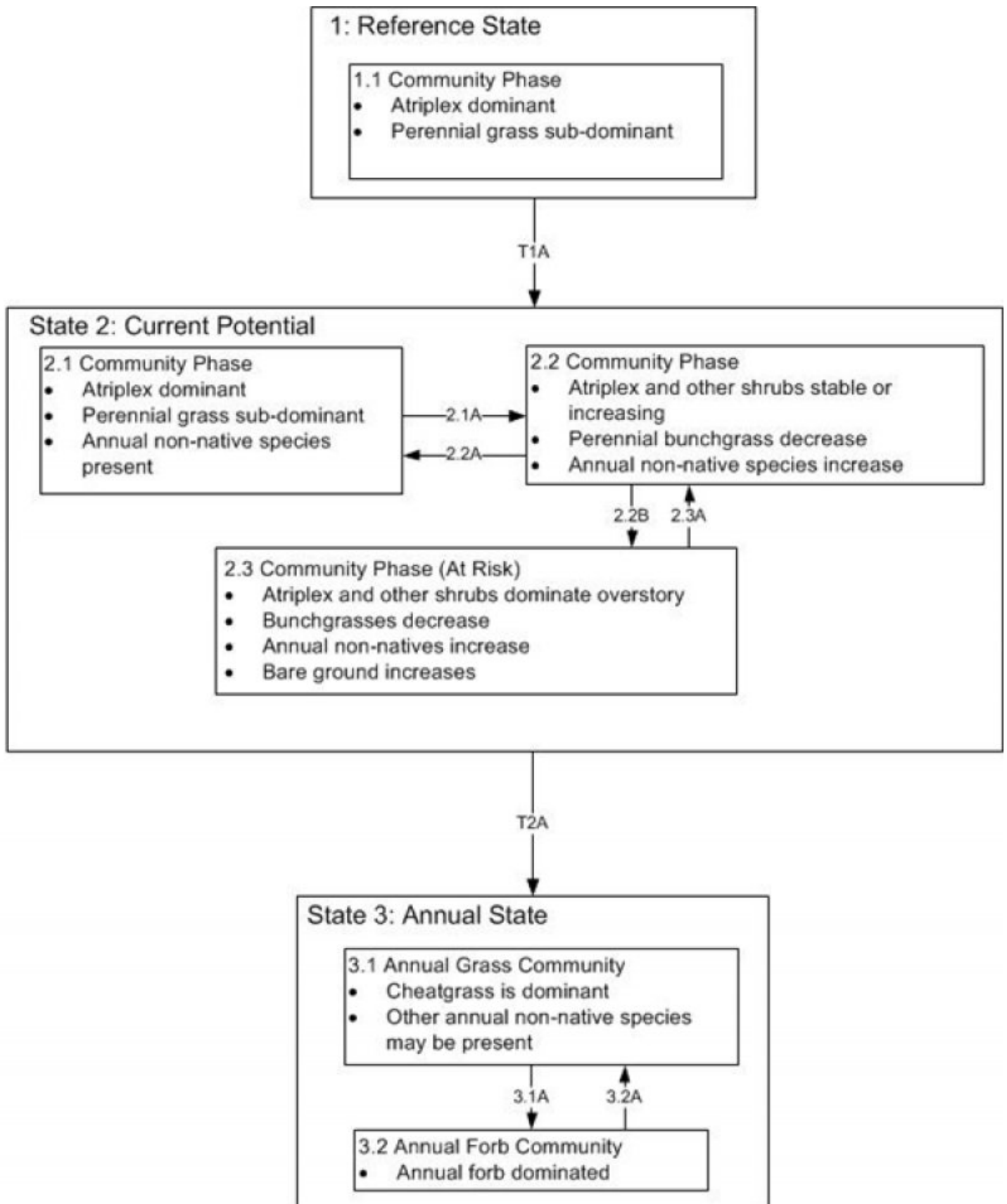


Figure 3. DRAFT STM

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

T2A: Inadequate rest and recovery from defoliation and/or prolonged drought/Catastrophic wildfire.

3.1A: fire or cheatgrass die off

3.2A: time

Figure 4. DRAFT STM LEGEND

State 1

Reference State

Community 1.1

Reference Plant Community

The reference plant community is dominated by Torrey's quailbush and basin wildrye. Potential vegetative composition is about 35% grasses, 5% forbs and 60% shrubs. Approximate ground cover (basal and crown) is 25 to 45 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	538	807	1009
Grass/Grasslike	314	471	588
Forb	45	67	84
Total	897	1345	1681

State 2

Current Potential State

State 3

Annual State

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			323–740	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	269–538	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	27–135	–
	saltgrass	DISP	<i>Distichlis spicata</i>	27–67	–
2	Secondary Perennial Grasses			27–202	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	7–40	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	7–40	–
Forb					
3	Perennial			27–108	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	3–40	–
	povertyweed	IVAX	<i>Iva axillaris</i>	7–40	–
	niterwort	NITRO	<i>Nitrophila</i>	7–40	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	7–40	–
	thelypody	THELY	<i>Thelypodium</i>	7–40	–
4	Annual			1–40	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	269–538	–
Shrub/Vine					
5	Primary Shrubs			405–847	
	Torrey's saltbush	ATTO	<i>Atriplex torreyi</i>	336–538	–
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	67–202	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	1–108	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	7–40	–
6	Secondary Shrubs			67–202	
	povertyweed	IVAX	<i>Iva axillaris</i>	7–40	–
	niterwort	NITRO	<i>Nitrophila</i>	7–40	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	7–40	–
	thelypody	THELY	<i>Thelypodium</i>	7–40	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	13–40	–
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	13–40	–
	rubber rabbitbrush	ERNAN5	<i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>nauseosa</i>	13–40	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	13–40	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	13–40	–
	seepweed	SUAED	<i>Suaeda</i>	13–40	–

Animal community

Livestock Interpretations:

This site is suited to livestock grazing. Grazing management should be keyed to basin wildrye and alkali sacaton production. 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. 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. Livestock browse the leaves of Torrey's quailbush.

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:

Leaves and seeds of Torrey's quailbush are eaten by many species. Mule deer and pronghorn browse the leaves. Small mammals such as rabbits and rodents have been reported to eat Torrey's quailbush. Dense stands of Torrey's quailbush provide excellent cover for several species. 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. 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.

Hydrological functions

Runoff is high. Permeability is slow.

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 early summer. This site offers rewarding opportunities to photographers and for nature study. This site is used for camping and hiking and has potential for upland and big game hunting.

Other products

Tribes of the American southwest used Torrey's quailbush seeds to make a thick gruel. They made flour to make small cakes, used the leaves as soap, and used the flowers, stems and leaves as a treatment for nasal congestion. The seeds were likely used in a similar way to fourwing saltbush. Seeds of fourwing saltbush were also reportedly ground into flour. Other uses for fourwing saltbrush that may have been similar for big saltbrush are the use of the ground meal as an emetic, use of ground flowers or roots moistened with saliva in treating ant bites, and addition of ashes to water for dyeing meal greenish-blue. Basin wildrye was used as bedding for various Native American ceremonies, providing a cool place for dancers to stand.

Other information

Torrey's quailbush is a recommended revegetation species in riparian areas throughout its range and has also been used in revegetation projects in other habitats. 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. Alkali sacaton is one of the most commonly used species for seeding and stabilizing disturbed lands. Due to alkali sacaton's salt tolerance, it is recommended for native grass seeding on subirrigated saline sites.

Type locality

Location 1: White Pine County, NV	
Township/Range/Section	T11N R61E S32
Latitude	38° 46' 21"
Longitude	115° 8' 31"

General legal description	NW¼SE¼ Section 32, T11N. R61E. MDBM. About 8 miles southwest of Lund, approximately 1½ miles north of White Pine and Nye County line, White Pine County, Nevada. Also found in Nye County.
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Other references

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

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

Contributors

RRK

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:

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:**
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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):**
-
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:**
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17. **Perennial plant reproductive capability:**
