

# Ecological site R029XY047NV TRAVERTINE BAR

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.

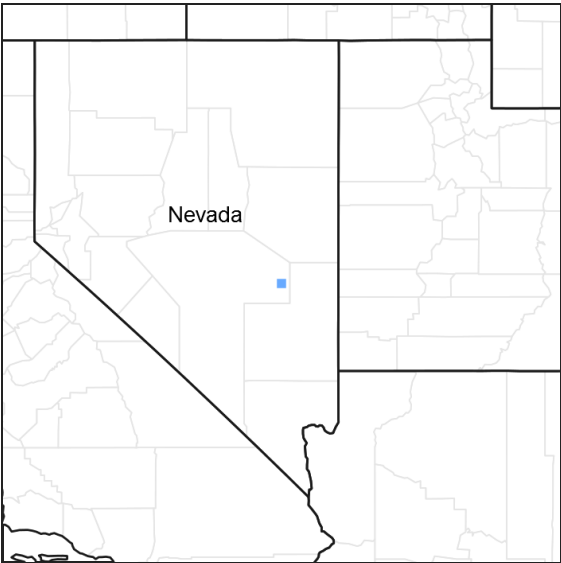


Figure 1. Mapped extent

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

F028BY064NV	Shallow Gravelly Mountains 12-16 P.Z
R029XY008NV	SHALLOW CALCAREOUS LOAM 8-12 P.Z.

## Similar sites

R029XY099NV	<b>STONY CALCAREOUS HILL</b> BEFR not dominant or codominant shrub
R029XY014NV	<b>SHALLOW CALCAREOUS SLOPE 8-12 P.Z.</b> BEFR absent to rare
R029XY028NV	<b>SHALLOW CALCAREOUS SLOPE 12-14 P.Z.</b> BEFR absent to rare
R029XY081NV	<b>SHALLOW CALCAREOUS HILL 10-14 P.Z.</b> BEFR absent to rare
R029XY008NV	<b>SHALLOW CALCAREOUS LOAM 8-12 P.Z.</b> BEFR absent to rare
R029XY015NV	<b>SHALLOW CALCAREOUS HILL 8-10 P.Z.</b> JUOS dominates visual landscape

R029XY092NV	<b>BARREN FAN 8-10 P.Z.</b> ARPY2 dominant shrub; BEFR absent to rare
-------------	--

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Mahonia fremontii</i> (2) <i>Artemisia nova</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

## Physiographic features

This site occurs on fan remnants. Slopes range from 2 to 30 percent. Elevations are 5600 to about 7000 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Fan remnant
Elevation	1,707–2,134 m
Slope	2–30%
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 about 8(10) inches. Mean annual air temperature is 47 to 53 degrees F. The average growing season is about 100 to 140 days.

**Table 3. Representative climatic features**

Frost-free period (average)	140 days
Freeze-free period (average)	0 days
Precipitation total (average)	254 mm

## Influencing water features

There are no influencing water features associated with this site.

## Soil features

The soil associated with this site are shallow and excessively well drained. They are derived from travertine, a calcium carbonate material deposited from solution in ground and surface waters. These soils have very low available water capacity and moderately rapid water intake rates. Runoff is high and potential for sheet and rill erosion is moderate. The soil series associated with this site include: Spager.

**Table 4. Representative soil features**

Surface texture	(1) Gravelly loam (2) Very gravelly loam (3) Very gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat excessively drained
Permeability class	Moderately rapid
Soil depth	25–51 cm

Surface fragment cover <=3"	23–44%
Surface fragment cover >3"	3–5%
Available water capacity (0-101.6cm)	2.79–3.05 cm
Calcium carbonate equivalent (0-101.6cm)	15–70%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	5–30
Soil reaction (1:1 water) (0-101.6cm)	7.4–9
Subsurface fragment volume <=3" (Depth not specified)	23–44%
Subsurface fragment volume >3" (Depth not specified)	3–5%

## Ecological dynamics

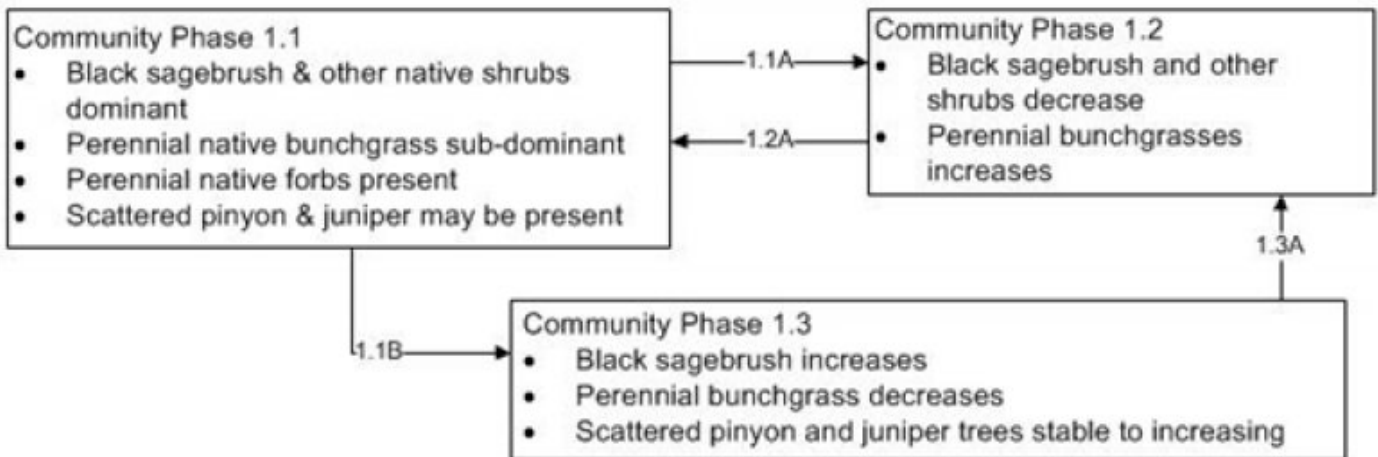
Where management results in abusive livestock use, Douglas' rabbitbrush and Fremont's barberry increase, while Indian ricegrass will decrease. Black sagebrush will decrease with continual heavy use by sheep. The numerous caespitose perennial forbs are susceptible to damage from concentrated livestock trampling.

### Fire Ecology:

Fremont barberry is moderately tolerant of fire. It is a vigorous sprouter following fire and may be favored by intense fire. Black sagebrush communities generally lack enough fine fuels to carry a fire. In addition to low fine fuel loading, wide shrub spacing makes fire infrequent or difficult to prescribe in black sagebrush types. Black sagebrush is highly susceptible to fire-caused mortality; plants are readily killed by all fire intensities. Following burning, reestablishment occurs through off-site sources. Nevada ephedra generally sprouts after fire damages aboveground vegetation. Underground regenerative structures commonly survive when aboveground vegetation is consumed by fire. However, severe fires may kill shallowly buried regenerative structures. Green ephedra generally sprouts vigorously from the roots or woody root crown after fire and rapidly produces aboveground biomass from surviving meristematic tissue. Indian ricegrass can be killed by fire, depending on severity and season of burn. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas. Bottlebrush squirreltail's small size, coarse stems, and sparse leafy material aid in its tolerance of fire. Postfire regeneration occurs from surviving root crowns and from on- and off-site seed sources. Frequency of disturbance greatly influences postfire response of bottlebrush squirreltail. Undisturbed plants within a 6 to 9 year age class generally contain large amounts of dead material, increasing bottlebrush squirreltail's susceptibility to fire.

## State and transition model

## State 1: Reference State



T1A

## State 2: Current Potential State

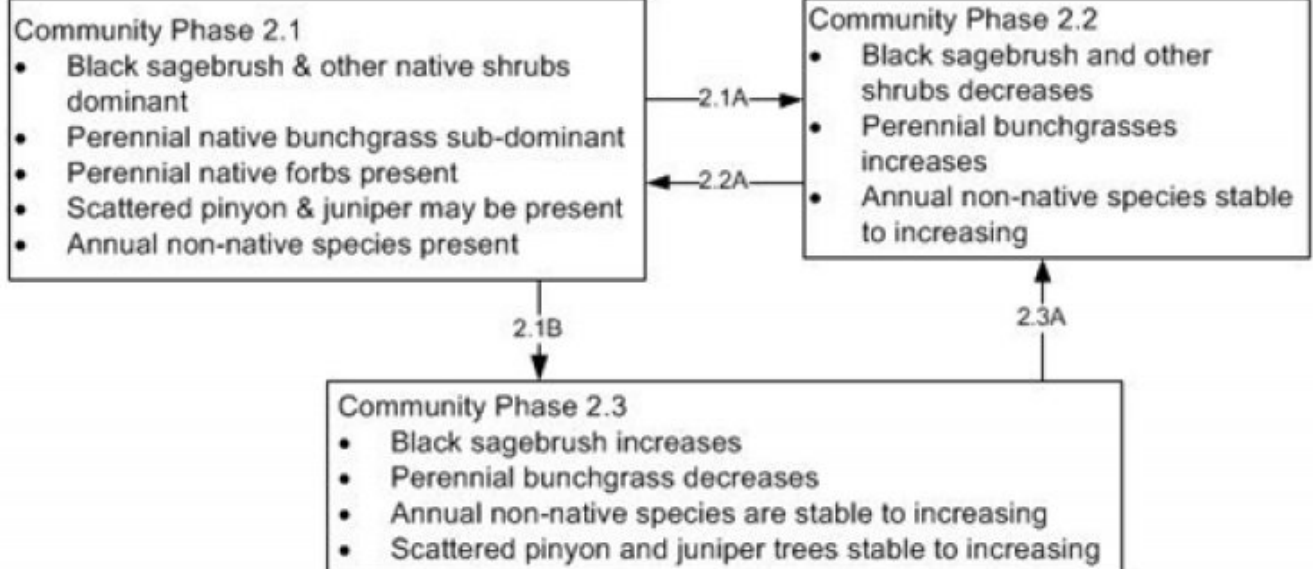


Figure 3. DRAFT STM

State 1: Representative of the reference conditions prior to Euro-American settlement in the west.

1.1A: fire or other disturbance that removes sagebrush canopy

1.1B: absence of disturbance and natural regeneration over time

1.2A: absence of disturbance and natural regeneration over time

1.3A: fire or other disturbance that removes sagebrush canopy

T1A: introduction of non-native species

State 2: Representative of the current potential with the presence of non-native annuals. Non-native annuals have the ability to significantly change disturbance regimes and nutrient cycling dynamics.

2.1A: fire or other disturbance that removes sagebrush canopy

2.1B: absence of disturbance and natural regeneration over time, may be coupled with inadequate rest and recovery from defoliation

2.2A: absence of disturbance and natural regeneration over time

2.3A: fire or other disturbance that removes sagebrush canopy

Figure 4. DRAFT STM LEGEND

**State 1**

**Reference State**

**Community 1.1**

**Reference Plant Community**

The reference plant community is dominated by Fremont's barberry and black sagebrush. Other important species on this site are Indian ricegrass, and ephedra. Potential vegetative composition is about 15% grasses 10% forbs and 75% shrubs and trees. Approximate ground cover (basal and crown) is 10 to 20 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	168	252	336
Grass/Grasslike	34	50	67
Forb	22	34	45
<b>Total</b>	<b>224</b>	<b>336</b>	<b>448</b>

## State 2 Current Potentital 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			24–67	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	17–50	—
	squirreltail	ELEL5	<i>Elymus elymoides</i>	7–17	
2	Secondary Perennial Grasses			10–76	
	threeawn	ARIST	<i>Aristida</i>	2–7	—
	needle and thread	HECO26	<i>Hesperostipa comata</i>	2–7	—
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	2–7	—
Forb					
3	Perennial			7–27	
	draba	DRABA	<i>Draba</i>	2–7	—
	buckwheat	ERIOG	<i>Eriogonum</i>	2–7	—
	globemallow	SPHAE	<i>Sphaeralcea</i>	2–7	—
	desert princesplume	STPI	<i>Stanleya pinnata</i>	2–7	—
4	Annual			1–10	
Shrub/Vine					
5	Primary Shrubs			158–303	
	Fremont's mahonia	MAFR3	<i>Mahonia fremontii</i>	84–151	—
	black sagebrush	ARNO4	<i>Artemisia nova</i>	67–135	—
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	3–9	—
	mormon tea	EPVI	<i>Ephedra viridis</i>	3–8	—
6	Secondary Shrubs			26–76	
	Bigelow sage	ARBI3	<i>Artemisia bigelovii</i>	3–17	—
	pygmy sagebrush	ARPY2	<i>Artemisia pygmaea</i>	3–17	—
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	3–17	—
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	3–17	—
	littleleaf horsebrush	TEGL	<i>Tetradymia glabrata</i>	3–17	—

## **Animal community**

### **Livestock Interpretations:**

This site is suitable for livestock grazing. Grazing management should be keyed to perennial grass production. Indian ricegrass is highly palatable to all classes of livestock in both green and cured condition. It supplies a source of green feed before most other native grasses have produced much new growth. Bottlebrush squirreltail is very palatable winter forage for domestic sheep of Intermountain ranges. Domestic sheep relish the green foliage. Overall, bottlebrush squirreltail is considered moderately palatable to livestock. Fremont's barberry browse contains toxic alkaloids and is slightly poisonous and unpalatable to livestock. In winter, at lower elevations, black sagebrush is heavily utilized by domestic sheep. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats. Green ephedra is heavily browsed by livestock on winter range but only moderately or lightly browsed during other seasons.

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:**

Fremont's barberry is an important forage species for many wildlife species. Black sagebrush is a significant browse species within the Intermountain region. It is especially important on low elevation winter ranges in the southern Great Basin, where extended snow free periods allow animal's access to plants throughout most of the winter. In these areas it is heavily utilized by pronghorn and mule deer. Sagebrush-grassland communities provide critical sage-grouse breeding and nesting habitats. Sagebrush is a crucial component of their diet year-round, and sage-grouse select sagebrush almost exclusively for cover. Sage-grouse prefer mountain big sagebrush and Wyoming big sagebrush communities to basin big sagebrush communities. Mule deer, bighorn sheep, and pronghorn browse Nevada ephedra, especially in spring and late summer when new growth is available. Green ephedra is an important browse species for big game animals. Green ephedra is heavily used by wildlife on winter ranges. Indian ricegrass is eaten by pronghorn in moderate amounts whenever available. A number of heteromyid rodents inhabiting desert rangelands show preference for seed of Indian ricegrass. Indian ricegrass is an important component of jackrabbit diets in spring and summer. Indian ricegrass seed provides food for many species of birds. Doves, for example, eat large amounts of shattered Indian ricegrass seed lying on the ground. Bottlebrush squirreltail is a dietary component of several wildlife species.

## **Hydrological functions**

Runoff is high. Permeability is moderately rapid.

## **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 bird and big game hunting.

## **Other products**

Native Americans used Nevada ephedra as a tea to treat stomach and kidney ailments. Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used the seed as a reserve food source.

## **Other information**

Black sagebrush is an excellent species to establish on sites where management objectives include restoration or improvement of domestic sheep, pronghorn, or mule deer winter range. Nevada ephedra is useful for erosion control, and seedlings have been successfully planted onto reclaimed strip mines, with survival ranging from 12 to 94%. Atrazine may be effective in controlling Nevada ephedra, though some plants can survive through crown sprouting. Irrigation may increase control by atrazine. Green ephedra is listed as a successful shrub for restoring western rangeland communities and can be used to rehabilitate disturbed lands. It also has value for reducing soil erosion on both clay and sandy soils. Green ephedra establishes readily through direct seeding, transplants, and

stem cuttings. Bottlebrush squirreltail is tolerant of disturbance and is a suitable species for revegetation.

## Type locality

Location 1: Nye County, NV	
Township/Range/Section	T6N R61E S20
Latitude	38° 21' 52"
Longitude	115° 8' 41"
General legal description	SW¼NW¼ Section 20, T6N. R61E. MDBM. About 2 miles southwest of Sunnyside, east side of Hot Creek Butte, adjacent to Kirch Wildlife Management Area, Nye County, Nevada.

## 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	State Rangeland Management Specialist.
Date	05/01/1988
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:**
- 
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:

---

17. **Perennial plant reproductive capability:**

---