USDA Natural Resources
Conservation Service

Ecological site R030XA095NV
SHALLOW GRAVELLY SLOPE 5-7 P.Z.

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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.

Ecological site concept

This site occurs on summits and sideslopes of hills, lower mountains, and fan remnants. Slopes range from 4 to over 75 percent, but slope gradients of 15 to 30 percent are typical. Elevations are 3500 to 4600 feet.The soils associated with this site are very shallow to shallow and have formed in residuum from mixed parent materials.

Please refer to group concept R030XB076NV to view the provisional STM.

Associated sites

R030XA094NV	**SHALLOW GRAVELLY LOAM 5-7 P.Z.**

Similar sites

R030XA006NV	**SHALLOW LIMESTONE SLOPE 5-7 P.Z.** ATCO codominant shrub
R030XA094NV	**SHALLOW GRAVELLY LOAM 5-7 P.Z.** More productive site

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Coleogyne ramosissima*
Herbaceous	(1) *Achnatherum hymenoides* (2) *Achnatherum speciosum*

Physiographic features

This site occurs on summits and sideslopes of hills, lower mountains, and fan remnants. Slopes range from 4 to over 75 percent, but slope gradients of 15 to 30 percent are typical. Elevations are 3500 to 4600 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain (3) Fan remnant
Elevation	1,067–1,402 m
Slope	4–75%
Aspect	Aspect is not a significant factor

Climatic features

The climate is hot and arid, with mild winters and very hot summers. Precipitation is greatest in the winter with a lesser secondary peak in summer, typical of the Mojave Desert. Average annual precipitation is 5 to 7(8) inches. Mean annual air temperature is 53 to 60 degrees F. The average growing season is about 130 to 180 days.

Table 3. Representative climatic features

Frost-free period (average)	180 days
Freeze-free period (average)	
Precipitation total (average)	178 mm

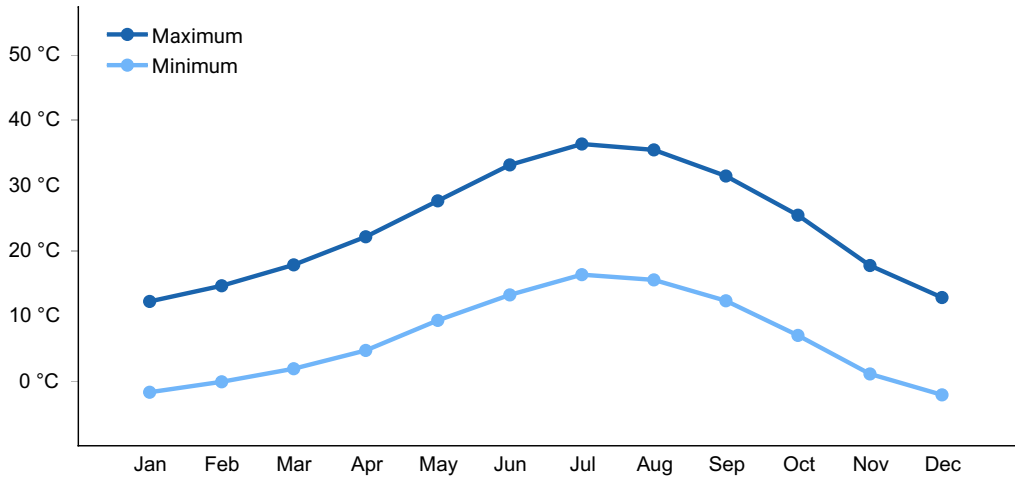

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are very shallow to shallow and have formed in residuum from mixed parent materials. A representative surface cover of rock fragments is about 45 percent gravels and 25 percent cobbles. These soils are well drained with very high runoff. Water intake rates are moderately slow to moderate and available water capacity is very low. The soils associated with this site include: Longjim, Zibate, and Zyplar.

Table 4. Representative soil features

Surface texture	(1) Very gravelly sandy loam (2) Extremely gravelly clay loam (3) Gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderate
Soil depth	10–51 cm
Surface fragment cover <=3"	40–45%
Surface fragment cover >3"	12–15%
Available water capacity (0-101.6cm)	3.05–6.1 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–5
Soil reaction (1:1 water) (0-101.6cm)	7.4–9
Subsurface fragment volume <=3" (Depth not specified)	17–65%
Subsurface fragment volume >3" (Depth not specified)	2–9%

Ecological dynamics

Please refer to group concept R030XB076NV to view the provisional STM.

As ecological condition deteriorates, blackbrush increases almost to the exclusion of all other species. Following wildfire, fire tolerant/crown-sprouting shrubs increase and often dominate this site.
Current knowledge indicates that upwards of one hundred, or more, years may be required for reestablishing a blackbrush stand following a fire.

Fire Ecology:
Low amounts of fine fuels in interspaces probably limited fire spread to only extreme fire conditions, during which high winds, low relative humidity, and low fuel moisture led to high intensity stand-replacing crown fires. Historical fire return intervals appear to have been on the order of centuries, allowing late seral blackbrush stands to reestablish. Blackbrush stands are subject to fire, and fire will start and spread easily due to the dense, close spacing nature and resinous foliage of blackbrush. Blackbrush is slow to reestablish. Nevada ephedra is top-killed by fire. Underground regenerative structures commonly survive when aboveground vegetation is consumed by fire. Nevada ephedra generally sprouts after fire damages aboveground vegetation and may increase in plant cover. Desert needlegrass has persistent dead leaf bases, which make it susceptible to burning. Fire removes the accumulation; a rapid, cool fire will not burn deep into the root crown and surviving tufts will resprout. 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.

State and transition model

Ecosystem states

1. Reference Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1

Reference Plant Community

Community 1.1
Reference Plant Community

The reference plant community is dominated by blackbrush. Potential vegetative composition is about 10% grasses, 10% annual and perennial forbs and 80% shrubs. Approximate ground cover (basal and crown) is less than 12 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	67	157	269
Forb	8	19	34
Grass/Grasslike	9	20	34
Total	**84**	**196**	**337**

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**			4–22	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	2–11	–
	desert needlegrass	ACSP12	*Achnatherum speciosum*	2–11	–
2	**Secondary Perennial Grasses**			4–11	
	threeawn	ARIST	*Aristida*	1–6	–
	King's eyelashgrass	BLKI	*Blepharidachne kingii*	1–6	–
	squirreltail	ELEL5	*Elymus elymoides*	1–6	–
	James' galleta	PLJA	*Pleuraphis jamesii*	1–6	–
	bluegrass	POA	*Poa*	1–6	–
3	**Annual Grasses**			1–11	
Forb					
4	**Perennial Forbs**			1–11	
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	1–4	–
5	**Annual Forbs**			1–11	
Shrub/Vine					
6	**Primary shrubs**			139–185	
	blackbrush	CORA	*Coleogyne ramosissima*	135–168	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	4–17	–
7	**Secondary shrubs**			11–28	
	burrobush	AMDU2	*Ambrosia dumosa*	2–10	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	2–10	–
	creosote bush	LATR2	*Larrea tridentata*	2–10	–
	desert pepperweed	LEFR2	*Lepidium fremontii*	2–10	–
	water jacket	LYAN	*Lycium andersonii*	2–10	–
	spiny menodora	MESP2	*Menodora spinescens*	2–10	–
	yucca	YUCCA	*Yucca*	2–10	–

Animal community

Livestock Interpretations:
This site has limited value for livestock grazing, due to the low forage production, steep slopes and stony surfaces. Desert needlegrass produces considerable basal foliage and is good forage while young. Young desert needlegrass is palatable to all classes of livestock. Mature herbage is moderately grazed by horses and cattle but rarely grazed by sheep. 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. Blackbrush areas are economically important for winter grazing by domestic livestock, especially sheep. But it does provide poor forage during the spring, summer, and fall for domestic cattle, horses, and domestic sheep. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats. Nevada ephedra is usually grazed heavily and seems to be perfectly safe for grazing livestock since it induces neither toxicity in ewes or cows, nor congenital deformities in lambs.

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:
Blackbrush areas are economically important for winter grazing primarily for several wildlife species. Mule deer and bighorn sheep generally use the blackbrush vegetation type in winter. Mule deer, bighorn sheep, and pronghorn browse Nevada ephedra, especially in spring and late summer when new growth is available. Mountain quail eat Ephedra seeds. Desert bighorn sheep and feral horses and burros will graze desert needlegrass. Indian ricegrass is eaten by pronghorn in "moderate" amounts whenever available. In Nevada it is consumed by desert bighorns. 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. In Nevada, Indian ricegrass may even dominate jackrabbit diets during the spring through early summer months. 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.

Hydrological functions

Runoff is very high. Permeability is moderately slow to moderate.

Other products

Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. Some Native American tribes steeped the twigs of Nevada ephedra and drank the tea as a general beverage.

Other information

Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling.

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T11S R48E S26
General legal description	Yucca Mountain area, north of Crater Flat, about 10 miles east of Beatty, 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

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Approval

Kendra Moseley, 2/18/2025

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	05/21/2025
Approved by	Kendra Moseley
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:**

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:**