USDA Natural Resources
Conservation Service

Ecological site R030XA007NV
GRAVELLY LOAM 5-7 P.Z.

Accessed: 05/13/2025

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

The site occurs on summits and sideslopes of higher-lying erosional fan remnants. Slopes range from 2 to 30 percent, but slope gradients of 2 to 8 percent are most typical. Elevations are 2800 to 4000 feet.

The soils of this site have formed in alluvium from calcareous sedimentary parent material. These soils are typically shallow to an indurated hardpan or calcic horizon.

Associated sites

R030XA058NV	**LIMY 5-7 P.Z.**
R030XA076NV	**UPLAND WASH**
R030XA094NV	**SHALLOW GRAVELLY LOAM 5-7 P.Z.**
R030XA095NV	**SHALLOW GRAVELLY SLOPE 5-7 P.Z.**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Ambrosia dumosa* (2) *Krascheninnikovia lanata*
Herbaceous	(1) *Achnatherum speciosum*

Physiographic features

The site occurs on summits and sideslopes of higher-lying erosional fan remnants. Slopes range from 2 to 30 percent, but slope gradients of 2 to 8 percent are most typical. Elevations are 2800 to 4000 feet.

Table 2. Representative physiographic features

Landforms	(1) Inset fan (2) Fan remnant
Flooding frequency	None
Ponding frequency	None
Elevation	853–1,219 m
Slope	2–30%
Water table depth	0 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate on this site is arid, characterized by cool, moist winters, and hot, dry summers. Average annual precipitation is 5 to 7 inches. Mean annual air temperature is 56 to 60 degrees F. The average growing season is about 190 to 220 days.

Table 3. Representative climatic features

Frost-free period (average)	220 days
Freeze-free period (average)	0 days
Precipitation total (average)	178 mm

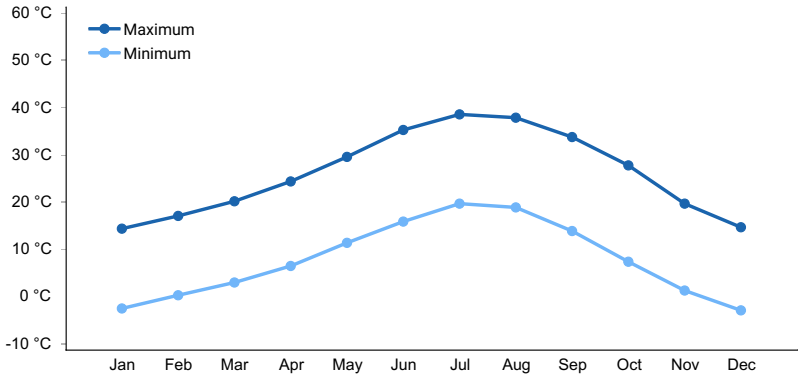

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils of this site have formed in alluvium from calcareous sedimentary parent material. These soils are typically shallow to an indurated hardpan or calcic horizon. The soils are predominantly coarse textured and have more that a 65 percent cover of large gravels and small cobbles on the soil surface. These soils are well drained and available water holding capacity is low. The soil series that is associated with this site include; Commiski, Lastchance, and Yurm.

Table 4. Representative soil features

Surface texture	(1) Very gravelly fine sandy loam (2) Extremely gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Soil depth	33–152 cm
Surface fragment cover <=3"	46–62%
Surface fragment cover >3"	5–10%
Available water capacity (0-101.6cm)	3.05–7.62 cm
Calcium carbonate equivalent (0-101.6cm)	25–45%
Electrical conductivity (0-101.6cm)	0–8 mmhos/cm

Sodium adsorption ratio (0-101.6cm)	1–13
Soil reaction (1:1 water) (0-101.6cm)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	40–66%
Subsurface fragment volume >3" (Depth not specified)	5–14%

Ecological dynamics

As ecological condition declines, creosotebush and white bursage increase as winterfat, Indian ricegrass, and desert needlegrass decrease. Introduced annual forbs and grasses readily invade this site.

Fire Ecology:
Fires in the desert are infrequent and of low severity because production of annual and perennial herbs seldom provides a fuel load capable of sustaining fire. Fire generally kills white bursage. White bursage seedling establishment on burned sites was poor during the first growing season after the fire but increased in later growing seasons.

Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the perennating buds located several inches above the ground surface, thus killing the plant. In addition, severe fire usually destroys seed on the plant. Low-severity fire scorches or only partially consumes the above ground portions of winterfat and thus does not cause high mortality.

Fire top-kills desert needlegrass. Most needlegrasses (Achnatherum spp.), especially young plants, are very susceptible to fire damage. Surviving tufts of desert needlegrass probably will sprout. Desert needlegrass has persistent dead leaf bases, which make it susceptible to burning.

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 characterized by an open canopy of shrubs and perennial grasses. The plant community is dominated by white bursage and winterfat. Creosotebush, wolfberry, Indian ricegrass, and desert needlegrass are other important species associated with this site. Potential vegetative composition is about 10% grasses, 10% perennial and annual forbs, and 80% shrubs. Approximate ground cover (basal and crown) is 5 to 15

percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	179	314	448
Forb	22	39	56
Grass/Grasslike	22	39	56
Total	**223**	**392**	**560**

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**			28–59	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	20–39	–
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	8–20	–
2	**Secondary Perennial Grasses**			1–20	
	threeawn	ARIST	*Aristida*	2–12	–
	low woollygrass	DAPU7	*Dasyochloa pulchella*	2–12	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	2–12	–
3	**Annual Grasses**			1–12	
Forb					
4	**Perennial Forbs**			8–31	
	milkvetch	ASTRA	*Astragalus*	2–8	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	2–8	–
5	**Annual Forbs**			1–39	
Shrub/Vine					
6	**Primary shrubs**			114–229	
	burrobush	AMDU2	*Ambrosia dumosa*	78–118	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	20–59	–
	creosote bush	LATR2	*Larrea tridentata*	8–31	–
7	**Secondary shrubs**			8–59	
	Nevada jointfir	EPNE	*Ephedra nevadensis*	4–12	–
	Torrey's jointfir	EPTO	*Ephedra torreyana*	4–12	–
	water jacket	LYAN	*Lycium andersonii*	4–12	–
	spiny menodora	MESP2	*Menodora spinescens*	4–12	–
	Fremont's dalea	PSFR	*Psorothamnus fremontii*	4–12	–
	Mojave yucca	YUSC2	*Yucca schidigera*	4–12	–

Animal community

Livestock Interpretations:
White bursage is an important browse species in several areas. Browsing pressure on white bursage is particularly heavy during years of low precipitation, when production of winter annuals is low. White bursage is of intermediate forage value. It is fair to good forage for horses and fair to poor for cattle and sheep. However, because there is

often little other forage where white bursage grows, it is often highly valuable to browsing animals.
Winterfat is an important forage plant for livestock and wildlife in salt-desert shrub rangeland and subalkaline flats, especially during winter when forage is scarce. Winterfat palatability to browsing animals is above average during all seasons but greatest during periods of active growth. Winterfat palatability is rated as good for sheep, good to fair for horses, and fair for cattle.
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.

Wildlife Interpretations:
Winterfat is an important forage plant for wildlife. Animals that browse winterfat include mule deer, desert bighorn sheep, and pronghorn. Palatability varies year to year. Desert needlegrass provides valuable forage for mule deer and desert bighorn sheep.

Hydrological functions

Potential for sheet and rill erosion is low.

Other products

White bursage is a host for sandfood (Pholisma sonorae), a parasitic plant with a sweet, succulent, subterranean flowerstalk. Sandfood was a valuable food supply for desert people.

Other information

White bursage may be used to revegetate disturbed sites in southwestern deserts. White bursage may be planted from containerized plants with a high probability of success. Plantings should be made in late winter or early spring, although the time of planting is less important than the vigor of the seedlings and rodent protectors should be used.

Winterfat is a useful shrub for reclamation and revegetation of disturbed sites in arid climates. Winterfat adapts well to most site conditions, and its extensive root system stabilizes soil. However, winterfat is intolerant of flooding, excess water, and acidic soils.

Desert needlegrass seeds are easily germinated and have potential for commercial use. Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling.

Inventory data references

NV-ECS-1: 2 records

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T22 S R57 E S19
General legal description	About 2 miles northeast of Pahrump to Las Vegas Highway (NV Highway 160) about 1/4 mile east of Lovell Wash Road. Clark County Nevada. This site also occurs in southern Nye Counties.

Other references

USDA-NRCS Plant Database (Online, http://plants.usda.gov/).

Fire Effects Information System (Online, http://www.fs.fed.us/database/feis/).

Contributors

GKB

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	05/13/2025
Approved by	Kendra Moseley
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):**

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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:**
