USDA Natural Resources
Conservation Service

Ecological site R030XB080NV
STONY LOAM 5-7 P.Z.

Last updated: 3/10/2025
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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 sideslopes and toeslopes of hills, lower mountains, and lava flows. The site is primarily found on north-facing aspects. Slopes range from 4 to 75 percent, but slope gradients of 8 to 30 percent are typical. Elevations are 2500 to 4500 feet.

Please refer to group concept R030XB067NV to view the provisional STM.

Associated sites

R030XB060NV	**GRANITIC NORTH SLOPE 5-7 P.Z.**
R030XB069NV	**BASALTIC HILL 5-7 P.Z.**
R030XB081NV	**BOULDERY SLOPE 5-7 P.Z.**

Similar sites

R030XB044NV	**COBBLY CLAYPAN 5-7 P.Z.** AMDU2 dominant shrub
R030XB089NV	**STONY LOAM 7-9 P.Z.** PLRI3-MUPO2 codominant more productive site
R030XB091NV	**MOUNTAIN RIDGE** occurs on mountain ridgeline; less productive site
R030XB105NV	**BOULDERY LIMESTONE SLOPE 5-7 P.Z.** MOUT & SAMO3 codominant shrubs w/KRLA2; less productive site
R030XB085NV	**BASALTIC NORTH SLOPE 7-9 P.Z.** MUPO2-ACSP12 codominant; PLRI3 minor grass

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Krascheninnikovia lanata*
Herbaceous	(1) *Pleuraphis jamesii*

Physiographic features

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Table 2. Representative physiographic features

Landforms	(1) Lava flow (2) Hill (3) Mountain slope
Elevation	762–1,372 m
Slope	4–75%
Aspect	Aspect is not a significant factor

Climatic features

The climate is by mild winters and very hot, dry summers. Average annual precipitation is 5 to 7 inches. Mean annual air temperature is 57 to 63 degrees F. The average growing season is about 190 to 240 days.

Table 3. Representative climatic features

Frost-free period (average)	240 days
Freeze-free period (average)	
Precipitation total (average)	178 mm

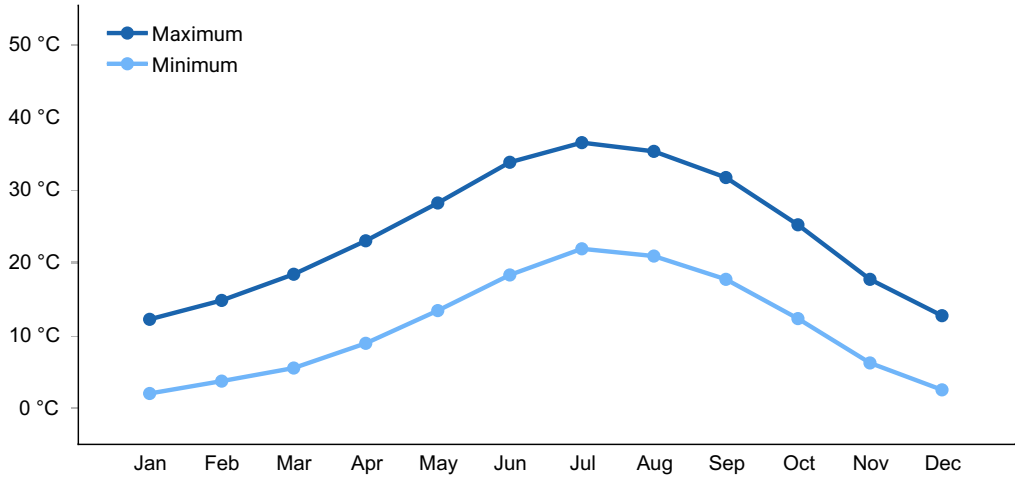

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soil associated with this site is well drained and modified with 50 to 75 percent rock fragments and more then half of these fragments are cobbles and stones. High amounts of rock fragments occur at the soil surface which occupy plant growing space yet help to reduce evaporation and conserve soil moisture. Coarse fragments on the surface provide a stabilizing affect of surface erosion conditions. Runoff is high to very high, available water capacity is very low to low and water intake rates are moderately rapid. The soil series associated with this site includes Railroad.

Table 4. Representative soil features

Surface texture	(1) Extremely stony sandy loam (2) Very gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid
Soil depth	76–99 cm
Surface fragment cover <=3"	30–35%
Surface fragment cover >3"	0–30%
Available water capacity (0-101.6cm)	7.37–7.62 cm
Calcium carbonate equivalent (0-101.6cm)	5–30%

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)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	40–48%
Subsurface fragment volume >3" (Depth not specified)	0–30%

Ecological dynamics

Please refer to group concept R030XB067NV to view the provisional STM.

As ecological condition deteriorates, creosotebush increases. Non-native annual grasses and forbs are invaders on this site.

Fire Ecology:
Prior to the invasion of exotic annuals, fire was an uncommon component of salt-desert shrub communities. Salt-desert communities dominated by winterfat and big galleta. produced little fine fuel. The introduction of annual grasses, including the highly flammable cheatgrass (*Bromus tectorum*), into these communities has altered fuel loads and fuel distribution. After wet years when annual grass production is high, salt-desert shrub communities are susceptible to fire. Fire drastically alters the community composition because salt-desert shrubs are not adapted to periodic fire. 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 and thus kills the plant. In addition, severe fire usually destroys seed on the plant. Low-severity fire scorches or only partially consumes the aboveground portions of winterfat and thus does not cause high mortality. Damage to big galleta from fire varies. If big galleta is dry, damage may be severe. However, when plants are green, fire will tend to be less severe and damage may be minimal, with big galleta recovering quickly.

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 winterfat and big galleta. Potential vegetative composition is about 70% grasses, 10% annual and perennial forbs and 20% shrubs. Approximate ground cover (basal and crown) is 15 to 25 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	471	628	863
Shrub/Vine	135	179	247
Forb	67	90	123
Total	**673**	**897**	**1233**

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**			485–771	
	big galleta	PLRI3	*Pleuraphis rigida*	448–583	–
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	18–72	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	18–72	–
	desert needlegrass	ACSP12	*Achnatherum speciosum*	1–45	–
2	**Secondary Perennial Grasses**			1–45	
	threeawn	ARIST	*Aristida*	4–18	–

	low woollygrass	DAPU7	*Dasyochloa pulchella*	4–18	–
	dropseed	SPORO	*Sporobolus*	4–18	–
3	**Annual Grasses**			1–45	
Forb					
4	**Primary Perennial forbs**			18–45	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	18–72	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	18–45	–
	desert needlegrass	ACSP12	*Achnatherum speciosum*	4–18	–
5	**Perennial forbs**			18–72	
6	**Annual forbs**			1–72	
Shrub/Vine					
7	**Primary shrubs**			108–224	
	winterfat	KRLA2	*Krascheninnikovia lanata*	90–179	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	18–45	–
8	**Secondary shrubs**			18–72	
	burrobush	AMDU2	*Ambrosia dumosa*	9–27	–
	Eastern Mojave buckwheat	ERFAP	*Eriogonum fasciculatum var. polifolium*	9–27	–
	spiny hopsage	GRSP	*Grayia spinosa*	9–27	–
	creosote bush	LATR2	*Larrea tridentata*	9–27	–
	water jacket	LYAN	*Lycium andersonii*	9–27	–
	Mojave woodyaster	XYTO2	*Xylorhiza tortifolia*	9–27	–
	Mojave yucca	YUSC2	*Yucca schidigera*	9–27	–

Animal community

Livestock Interpretations:
This site has limited value for livestock grazing due to steep slopes, a high amount of rock cover and winterfat. Grazing management should be keyed to big galleta. Big galleta is considered a valuable forage plant for cattle and domestic sheep. Its coarse, rigid culms make it relatively resistant to heavy grazing and trampling. Winterfat is an important forage plant for livestock, especially during winter when forage is scarce. Abusive grazing practices have reduced or eliminated winterfat on some areas even though it is fairly resistant to browsing. Effects depend on severity and season of grazing.

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:
Winterfat is an important forage plant for wildlife, especially during winter when forage is scarce. Winterfat seeds are eaten by rodents and is a staple food for black-tailed jackrabbits. Mule deer and pronghorn antelope browse winterfat. Winterfat is used for cover by rodents. It is potential nesting cover for upland game birds, especially when grasses grow up through its crown. Big galleta is an important forage species for several wildlife species.

Hydrological functions

runoff is high to very high. Permeability is moderately rapid.

Other information

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. Big galleta's clumped growth form stabilizes blowing sand.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T24S R61E S23
General legal description	Approximately Section 23, T24S. R61E. MDBM. East side of Hidden Valley, Clark 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

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	04/09/2026
Approved by	Sarah Quistberg
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):**

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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:**

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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):**

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:**