

Ecological site R030XB134NV QUARTZITE OUTWASH

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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

Please refer to group concept R030XB186CA to view the provisional group STM.

Associated sites

R030XA058NV	LIMY 5-7 P.Z.
R030XA071NV	COBBLY LOAM 5-7 P.Z.
R030XA093NV	QUARTZITE FAN 5-7 P.Z.
R030XB108NV	GRAVELLY INSET FAN 7-9 P.Z.

Similar sites

R030XB133NV	GRAVELLY INSET FAN 5-7 P.Z. MESp2 & PSFR codominant shrubs with AMDU2
R030XB051NV	UPLAND WASH MUPO2 major grass; on higher landscapes
R030XB108NV	GRAVELLY INSET FAN 7-9 P.Z. CORA dominant shrub
R030XA093NV	QUARTZITE FAN 5-7 P.Z. CORA-AMDU2 codominant shrubs; does not occur in drainageways

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Ambrosia dumosa</i> (2) <i>Eriogonum fasciculatum</i>
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Achnatherum speciosum</i>

Physiographic features

This site typically occurs on stream terraces or on concave areas receiving periodic runoff from higher landscapes. Slopes range from 2 to 8 percent. Elevations are 3000 to 5800 feet.

Table 2. Representative physiographic features

Landforms	(1) Stream terrace
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare to occasional
Elevation	910 – 1,770 m
Slope	0 – 10 %
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 inches. Mean annual air temperature 57 to 61 degrees F. The average growing season is about 200 to 250 days.

Table 3 Representative climatic features

Frost-free period (average)	250 days
Freeze-free period (average)	
Precipitation total (average)	180 mm

Influencing water features

This site is intermittently flooded.

Soil features

The soils associated with this site are very deep and somewhat excessively drained. They are formed in alluvium, from quartzite with minor amounts of limestone, dolomite, shale, and sandstone. Available water capacity is very low. These soils typically have over 50 percent rock fragments (by volume) within the soil profile. Rock fragments cover at least 50 percent of the surface soil. These soils have very low runoff and moderately rapid permeability. The soils have a calcic horizon from 29 to 35 inches. Soil series correlated to this site include Niavi.

Table 4. Representative soil features

Parent material	(1) Alluvium – quartzite
Surface texture	(1) Extremely cobbly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat excessively drained
Permeability class	Moderately rapid
Soil depth	180 – 210 cm
Surface fragment cover $\leq 3"$	40 %
Surface fragment cover $> 3"$	30 – 40 %
Available water capacity (0-101.6cm)	4.06 – 4.32 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 10 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 8.4

Subsurface fragment volume <=3" (Depth not specified)	50 – 60 %
Subsurface fragment volume >3" (Depth not specified)	10 – 30 %

Ecological dynamics

As ecological condition deteriorates the perennial grasses decrease. Opportunistic perennial species such as white bursage, wirelettuce and desert trumpet increase. Non-native species likely to invade this site include red brome, schismus, and red-stem filaree. White burrobush is the primary perennial pioneer species.

Desert communities are usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. When fires do occur, the effect on the ecosystem may be extreme due to the harsh environment and the slow rate of recovery. White bursage and creosotebush possess limited sprouting ability, thus, can be killed by fire. White bursage, however, can rapidly re-establish from seed. Fire damage to big galleta varies, depending on whether plants are dormant when burned. If plants are dry, damage may be severe because the live center may be burned out. Big galleta may resprout from rhizomes.

Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Close roads and trails no longer being used and revegetate using native species indigenous to this site.

Species indigenous to this site are recommended for any revegetation efforts. White bursage is valuable for erosion control and cover restoration. Big galleta has moderate potential for erosion control and long-term revegetation and low potential for short-term revegetation projects. Big galleta is somewhat effective at holding blowing sand because of its isolated, clumped growth form.

Transplanting seedlings is more effective than direct seeding. Planting in late fall or early spring allows for acclimation to summer conditions. Transplants that are dormant during the hot, dry season are best maintained that way rather than attempting to force them to break dormancy and undergo new vegetative growth out of season. Supplemental irrigation is recommended for the first growing season, especially if winter rainfall has been sparse. Summer annuals and non-native plants should be removed from around the transplanted shrubs to reduce competition for water. Protection from rodents is also recommended.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Shrub/Vine					
1	Shrubs			53-211	
	California broomsage	LESQ	<i>Lepidospartum squamatum</i>	45-179	–
	Eastern Mojave buckwheat	ERFA2	<i>Eriogonum fasciculatum</i>	3-16	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	2-4	–
	burrobrush	HYSA	<i>Hymenoclea salsola</i>	1-4	–
	desertsenna	SEAR8	<i>Senna armata</i>	1-2	–
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	0-2	–
Forb					
2	Annual forbs			3-13	
	flatspine bur ragweed	AMAC2	<i>Ambrosia acanthicarpa</i>	1-2	–
	brittle spineflower	CHBR	<i>Chorizanthe brevicornu</i>	1-2	–
	pincushion flower	CHFR	<i>Chaenactis fremontii</i>	1-2	–

	common pussypaws	CIMO4	<i>Cistanthe monandra</i>	0-1	–
	Bigelow's tickseed	COBI	<i>Coreopsis bigelovii</i>	0-1	–
	flatcrown buckwheat	ERDE6	<i>Eriogonum deflexum</i>	0-1	–
	pygmy poppy	ESMI	<i>Eschscholzia minutiflora</i>	0-1	–
	chia	SACO6	<i>Salvia columbariae</i>	0-1	–
	Booth's evening primrose	CABO7	<i>Camissonia boothii</i>	0-1	–

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 3.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

Livestock Interpretations: This site is suitable for livestock grazing. 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. 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. 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 and is sensitive to browsing. Mojave buckwheat has a browse rating of fair to poor for cattle. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. Encelia and white brittlebush have no forage value for domestic livestock. Range ratany is an important forage species for all classes of livestock. Palatability of range ratany is rated fair to good for cattle and sheep. Anderson wolfberry is sometimes used as forage by livestock and feral burros. Cattle will graze the stems of spiny menodora in the spring before the stems become woody and spiny. Spiny menodora has lower palatability than the other shrubs but is consumed during early spring before spines mature. 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: White bursage is an important browse species for wildlife. Creosotebush is unpalatable to most browsing wildlife. Virgin River encelia is important to the desert tortoise as a source of succulent forage in periods of low moisture. Encelia is a browse species of desert mule deer and desert bighorn sheep. White brittlebush is a browse species of desert mule deer and desert bighorn sheep. Range ratany is an important forage species for deer. Mule deer browse range ratany year-long with seasonal peaks. Mule deer peak use is from February to April and from August to October. Elk will graze the stems of spiny menodora in the spring before the stems become woody and spiny. 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 low and permeability is moderately rapid. This site is intermittently flooded. Hydrologic soil group is B.

Other products

Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. White bursage is a host for sandfood, a parasitic plant. Sandfood was a valuable food supply for Native Americans. Creosotebush has been highly valued for its medicinal properties by Native Americans. It has been used to treat at least 14 illnesses. Twigs and leaves may be boiled as tea, steamed, pounded into a powder, pressed into a poultice, or heated into an infusion. The stems of brittle bush exude a clear resin used by the Indians as glue and chewing gum. Native Americans used white burrobrush twigs and stems in several remedies. The twigs or leaves are mixed with all-thorn twigs, boiled, and the tea taken to treat skin rashes. The tea was used to relieve pain in the lungs and trachea, and to reduce swelling. Additionally, they use white burrobrush as a remedy for rheumatism. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use.

Other information

Big galleta's clumped growth form stabilizes blowing sand. Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling. White bursage may be used to revegetate disturbed sites in southwestern deserts. Once established, creosotebush may improve sites for annuals that grow under its canopy by trapping fine soil, organic matter, and symbiont propagules. It may also increase water infiltration and storage. Anderson wolfberry is also used as an ornamental valued chiefly for its showy red berries.

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T17S R53E S18
General legal description	Major drainageway, west side of Mount Schader, about 20 miles northeast of Pahrump, Nye County, Nevada. This site also occurs in southwestern Nye County.

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

Approval

Sarah Quistberg, 2/26/2025

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	08/31/2026
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:
