USDA Natural Resources
Conservation Service

Ecological site R029XY035NV
LOAMY 3-5 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.

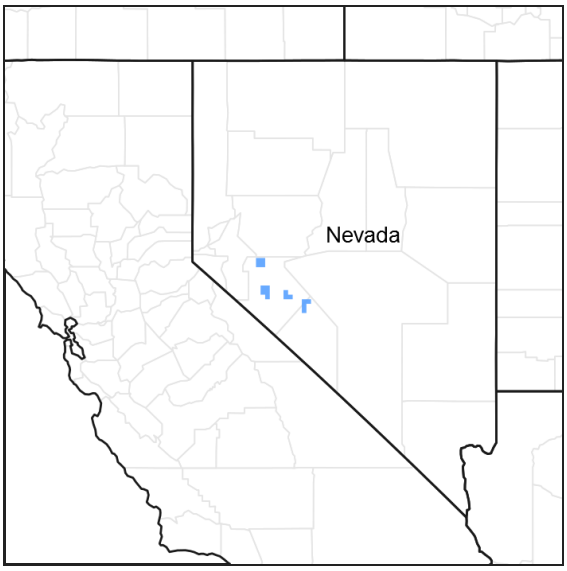

Figure 1. Mapped extent

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

R027XY043NV	**COARSE GRAVELLY LOAM 3-5 P.Z.**
R029XY032NV	**SODIC LOAM 3-5 P.Z.**
R029XY033NV	**LOAMY SLOPE 3-5 P.Z.**
R029XY034NV	**SANDY 3-5 P.Z.**
R029XY035NV	**LOAMY 3-5 P.Z.**

Similar sites

R029XY017NV	**LOAMY 5-8 P.Z.** More productive site;SAVEB & LYCIU rare to minor shrubs
R027XY043NV	**COARSE GRAVELLY LOAM 3-5 P.Z.** SAVEB codominant shrub
R029XY032NV	**SODIC LOAM 3-5 P.Z.** Less productive site; may be same site and eventually correlated
R029XY039NV	**COARSE GRAVELLY LOAM 3-5 P.Z.** SAVEB codominant shrub; more productive site

R029XY033NV	**LOAMY SLOPE 3-5 P.Z.** LYCIU & SAVEB rare to minor shrubs
R029XY021NV	**LOAMY HILL 5-8 P.Z.** GRSP-LYCIU codominant shrubs

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex confertifolia* (2) *Lycium shockleyi*
Herbaceous	(1) *Achnatherum hymenoides*

Physiographic features

This site occurs on lake plains and longshore bars. Slopes range from 0 to 4 percent. Elevations are 4100 to about 4500 feet.

Table 2. Representative physiographic features

Landforms	(1) Lake plain (2) Longshore bar (relict)
Elevation	1,250–1,372 m
Slope	0–4%
Aspect	Aspect is not a significant factor

Climatic features

Average annual precipitation is 3 to 5 inches. Mean annual air temperature is 54 to 60 degrees F. The average growing season is about 140 to about 200 days. No climate station is available for this location.

Table 3. Representative climatic features

Frost-free period (average)	200 days
Freeze-free period (average)	0 days
Precipitation total (average)	127 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site have formed in alluvium from volcanic sources. These soils are typically calcareous or carbonatic. Soil surfaces are gravelly and moderately coarse-textured. Water intake rates are moderately rapid, available water capacity is very low to high and soils are well to excessively well drained. Runoff is very low and sheet and rill erosion potential is low. Soil series associated with this site include: Demill, Lakash, Patna, and Toulon.

Table 4. Representative soil features

Surface texture	(1) Loamy sand (2) Very gravelly fine sandy loam (3) Very gravelly loam
Family particle size	(1) Loamy

Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderately rapid
Soil depth	183–213 cm
Surface fragment cover <=3"	40–52%
Surface fragment cover >3"	3–23%
Available water capacity (0-101.6cm)	5.59–30.99 cm
Calcium carbonate equivalent (0-101.6cm)	0–5%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–12
Soil reaction (1:1 water) (0-101.6cm)	6.6–9
Subsurface fragment volume <=3" (Depth not specified)	4–39%
Subsurface fragment volume >3" (Depth not specified)	2–23%

Ecological dynamics

As ecological condition deteriorates, shadscale, wolfberry, Bailey's greasewood, and burrobrush increase. Species likely to invade this site are annuals such as cheatgrass.

Fire Ecology:
The mean fire return interval for shadscale-greasewood communities range from 35 to 100 years. Shadscale 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. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes in shadscale communities by increasing fire frequency under wet to near-normal summer moisture conditions. When fire does occur, the effect on the ecosystem may be extreme. Budsage is killed by fire. Budsage communities rarely burn due to insufficient fire loads. Fire typically destroys aboveground parts of Shockley wolfberry, but the degree of damage to the plant depends on fire severity. Greasewood may be killed by severe fires, but it commonly sprouts soon after low to moderate-severity fire. Kochia is killed by fire.
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

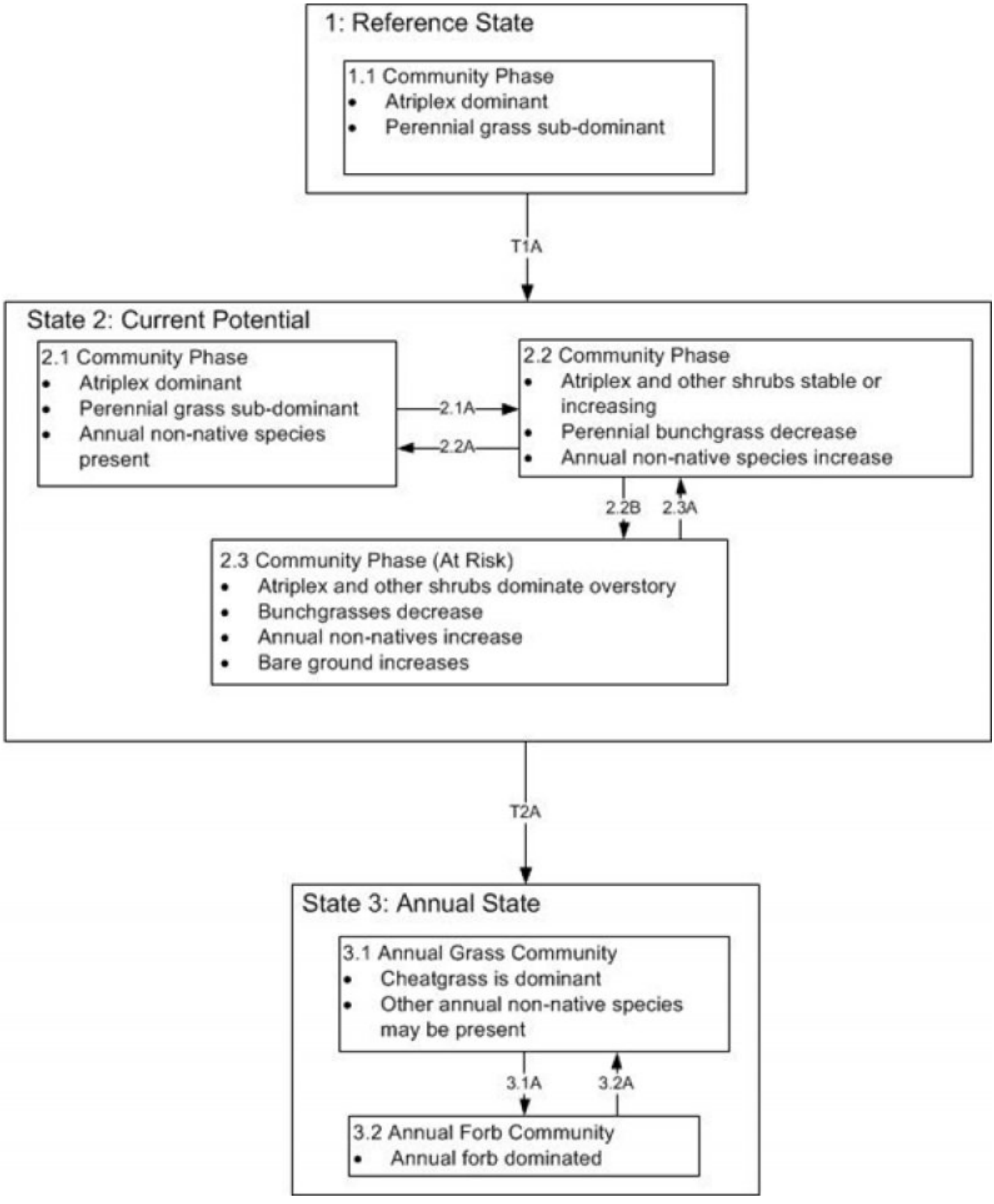

Figure 3. DRAFT STM

T1A: introduction of non-native species

2.1A: prolonged drought/ inadequate rest and recovery from defoliation
2.2A: rest and recovery
2.2B:prolonged drought/ inadequate rest and recovery from defoliation
2.3A: recovery or changes in management

T2A: Inadequate rest and recovery from defoliation and/or prolonged drought/Catastrophic wildfire.

3.1A: fire or cheatgrass die off
3.2A: time

Figure 4. DRAFT STM LEGEND

State 1
Reference State

Community 1.1
Reference Plant Community

The reference plant community is dominated by Shockley's wolfberry, shadscale, and bud sagebrush. Other important species are Indian ricegrass, Bailey's greasewood, and greenmolly kochia. Potential vegetative composition is about 10% grasses, 5% forbs and 85% shrubs. Approximate ground cover (basal and crown) is less than 10 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	95	143	238
Grass/Grasslike	11	17	28
Forb	6	9	13
Total	**112**	**169**	**279**

State 2
Current Potenital State

State 3
Annual 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**			11–31	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	9–26	–
	squirreltail	ELEL5	*Elymus elymoides*	2–6	–
2	**Secondary Perennial Grasses**			3–13	
	King's eyelashgrass	BLKI	*Blepharidachne kingii*	1–3	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	1–3	–
Forb					
3	**Perennial**			3–13	
	globemallow	SPHAE	*Sphaeralcea*	1–3	–
4	**Annual**			0–6	
Shrub/Vine					
5	**Primary Shrubs**			87–177	
	shadscale saltbush	ATCO	*Atriplex confertifolia*	50–67	–
	Shockley's desert-thorn	LYSH	*Lycium shockleyi*	17–50	–
	bud sagebrush	PIDE4	*Picrothamnus desertorum*	17–34	–
6	**Secondary Shrubs**			9–26	
	fourwing saltbush	ATCA2	*Atriplex canescens*	1–6	–
	Parry's saltbush	ATPA3	*Atriplex parryi*	1–6	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	1–6	–
	burrobrush	HYMEN3	*Hymenoclea*	1–6	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	1–6	–
	Nevada dalea	PSPO	*Psorothamnus polydenius*	1–6	–

Animal community

Livestock Interpretations:
This site has limited value for livestock grazing do to low forage production. Grazing management should be keyed to Indian ricegrass and perennial grass production. Indian ricegrass has good forage value for domestic sheep, cattle and horses. 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.
Shadscale is a valuable browse species, providing a source of palatable, nutritious forage for a wide variety of livestock. Shadscale provides good browse for domestic sheep. Shadscale leaves and seeds are an important component of domestic sheep and cattle winter diets. Shockley’s wolfberry is sometimes used as forage by livestock. Palatability of browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. Budsage is palatable and nutritious forage for domestic sheep in the winter and spring although it is known to cause mouth sores in lambs. Budsage can be poisonous or fatal to calves when eaten in quantity. Budsage, while desired by cattle in spring, is poisonous to cattle when consumed alone. Bailey’s greasewood is an important winter browse plant for domestic sheep and cattle. It also receives light to moderate use by domestic sheep and cattle during spring and summer months. Greasewood contains soluble sodium and potassium oxalates that may cause poisoning and death in domestic sheep and cattle if large amounts are consumed in a short time.

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:
Shadscale is a valuable browse species, providing a source of palatable, nutritious forage for a wide variety of wildlife particularly during spring and summer before the hardening of spiny twigs. It supplies browse, seed, and cover for birds, small mammals, rabbits, deer, and pronghorn antelope. Palatability of Shockley's wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. Budsage is palatable, nutritious forage for upland game birds, small game and big game in winter. Budsage is rated as "regularly, frequently, or moderately taken" by mule deer in Nevada in winter and is utilized by bighorn sheep in summer, but the importance of budsage in the diet of bighorns is not known. Bud sage comprises 18 – 35% of a pronghorn's diet during the spring where it is available. Chukar will utilize the leaves and seeds of bud sage. Budsage is highly susceptible to effects of browsing. It decreases under browsing due to year-long palatability of its buds and is particularly susceptible to browsing in the spring when it is physiologically most active. Bailey's greasewood is an important winter browse plant for big game animals and a food source for many other wildlife species. It also receives light to moderate use by mule deer and pronghorn during spring and summer months. 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. Bottlebrush squirreltail is a dietary component of several wildlife species. Bottlebrush squirreltail may provide forage for mule deer and pronghorn.

Hydrological functions

Runoff is very low. 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 and big game hunting.

Other products

Indian ricegrass was traditionally eaten by some Native American peoples. The Paiutes used seed as a reserve food source. Seeds of shadscale were used by Native Americans of Arizona, Utah and Nevada for bread and mush. The leaves, seeds and stems of greasewood are edible.

Other information

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

Type locality

Location 1: Mineral County, NV	
Township/Range/Section	T18N R30E S18
General legal description	NE¼ NW¼ Section 18, T8N. R30E. MDBM. About 3½ miles north of Hawthorne along west side of USHwy 95, Mineral County, Nevada. This site also occurs in 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/VWM

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	
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:**

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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:**
