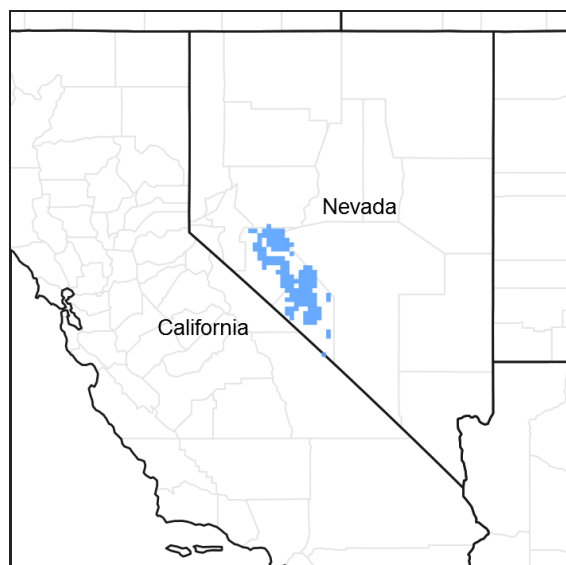


## **Ecological site R029XY032NV SODIC LOAM 3-5 P.Z.**

Accessed: 05/12/2024

### 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

R029XY021NV	<b>LOAMY HILL 5-8 P.Z.</b>
R029XY033NV	<b>LOAMY SLOPE 3-5 P.Z.</b>
R029XY035NV	<b>LOAMY 3-5 P.Z.</b>

### Similar sites

R029XY024NV	<b>SODIC TERRACE 5-8 P.Z.</b> SAVE4 dominant shrub
R029XY033NV	<b>LOAMY SLOPE 3-5 P.Z.</b> Less productive site; LYCIU rare to minor shrub
R029XY039NV	<b>COARSE GRAVELLY LOAM 3-5 P.Z.</b> More productive site; AMDU2-Lycium spp. codominant
R029XY059NV	<b>SHALLOW SILTY 5-8 P.Z.</b> Essentially a pure ATCO site
R029XY035NV	<b>LOAMY 3-5 P.Z.</b> ATCO-Lycium spp. codominant

R029XY017NV	<b>LOAMY 5-8 P.Z.</b> More productive site; SABA14 rare to minor shrub
R027XY043NV	<b>COARSE GRAVELLY LOAM 3-5 P.Z.</b> ATCO & Lycium spp. codominant with SABA14
R029XY087NV	<b>GRAVELLY LOAM 5-8 P.Z.</b> More productive site; SABA14 dominant shrub
R029XY022NV	<b>LOAMY SLOPE 5-8 P.Z.</b> More productive site

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Atriplex confertifolia</i>
Herbaceous	(1) <i>Achnatherum hymenoides</i>

## Physiographic features

This site occurs on summits and sideslopes of lower fan piedmonts and fan remnants on all aspects. Slopes range from 2 to 30 percent, but slope gradients of 2 to 8 percent are typical. Elevations are 4000 to about 5700 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Fan piedmont (2) Fan remnant
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	None to rare
Ponding frequency	None
Elevation	1,219–1,737 m
Slope	2–30%
Aspect	Aspect is not a significant factor

## Climatic features

The climate associated with this site is arid, characterized by cool, moist winters and hot, dry summers. Average annual precipitation is 3 to 5 inches. Mean annual air temperature is 53 to 57 degrees F. The average growing season is about 130 to 160 days.

**Table 3. Representative climatic features**

Frost-free period (average)	160 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 are well drained, and very deep, and are formed in alluvium from mixed sources. The soils are moderately to strongly alkaline. These soils have moderate to rapid water intake rates, available water capacity is low, and runoff is low to medium. Potential for sheet and rill erosion is slight to moderate. The soil

moisture regime is typic aridic and the soil temperature regime is mesic.

The soil series associated with this site include: Oricto, a sandy-skeletal, mixed, mesic Typic Calciargid. An ochric epipedon occurs from the soil surface to 8 cm and an argillic horizon occurs from 8 to 20 cm.

**Table 4. Representative soil features**

Parent material	(1) Alluvium–rhyolite
Surface texture	(1) Very gravelly fine sandy loam
Family particle size	(1) Sandy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	183–213 cm
Surface fragment cover <=3"	26–35%
Surface fragment cover >3"	2–15%
Available water capacity (0-101.6cm)	5.84–6.6 cm
Calcium carbonate equivalent (0-101.6cm)	5–15%
Electrical conductivity (0-101.6cm)	0–15 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	13–45
Soil reaction (1:1 water) (0-101.6cm)	8.5–9.6
Subsurface fragment volume <=3" (Depth not specified)	35–60%
Subsurface fragment volume >3" (Depth not specified)	15–25%

## Ecological dynamics

Where management results in abusive livestock use by cattle and /or feral horses, shadscale, Douglas rabbitbrush and Bailey greasewood increase, while bud sagebrush, Nevada ephedra and Indian ricegrass decrease. Species likely to invade this site are burrobrush, snakeweed, halogeton, cheatgrass, annual mustards, and Russian thistle.

### Fire Ecology:

The mean fire return interval for shadscale-greasewood communities range from 35 to over 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. Fire typically destroys aboveground parts of Shockley's 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. Budsage is killed by fire. Budsage communities rarely burn due to insufficient fire loads. 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. Galleta is a rhizomatous perennial which can resprout after top-kill by fire.

## State and transition model

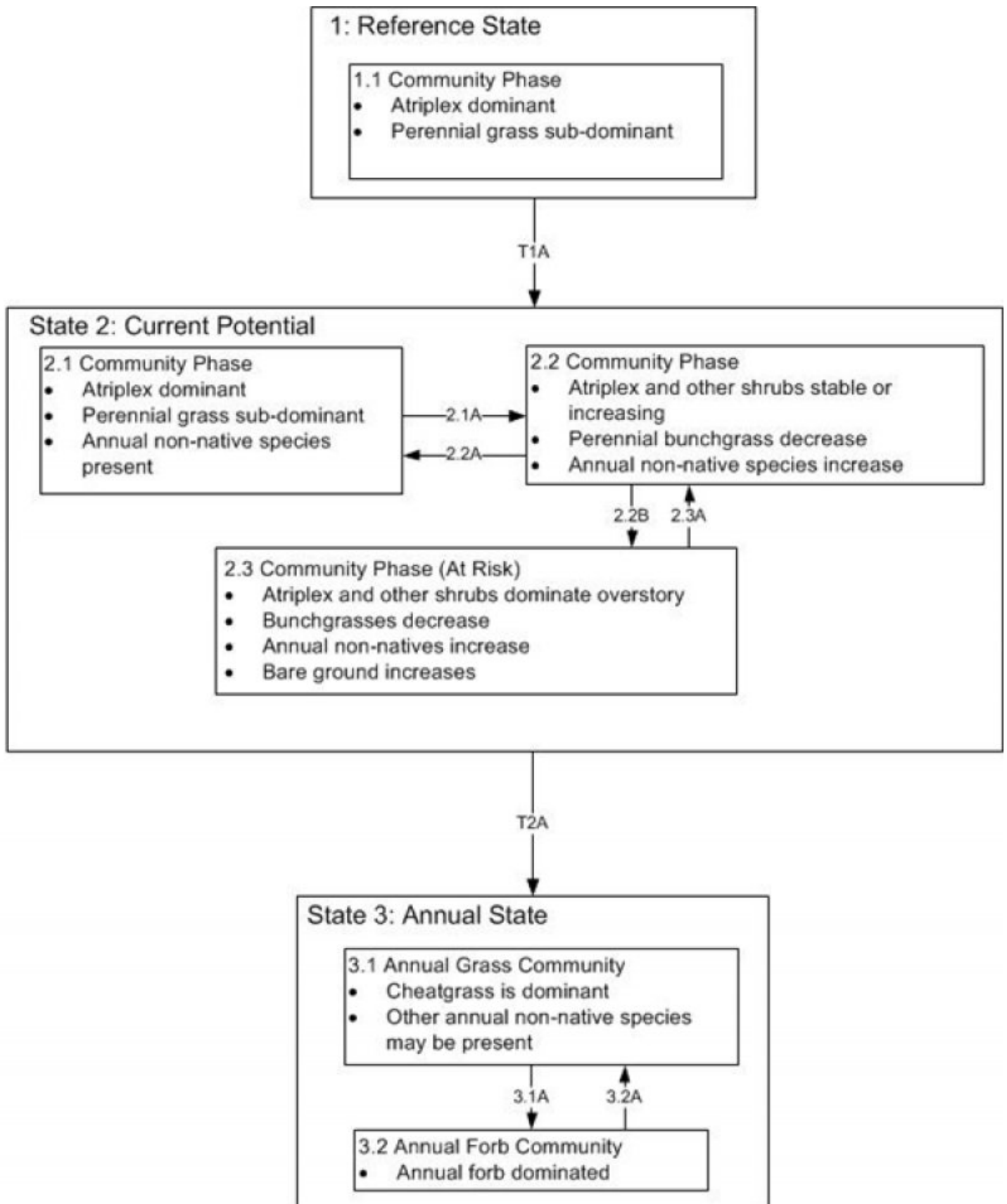


Figure 3. DRAFT STM

## 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 shadscale. Wolfberry, Bailey's greasewood, bud sagebrush, and Indian ricegrass are other important species associated with this site. Potential vegetative composition is about 10% grasses, 5% forbs and 85% shrubs. Approximate ground cover (basal and crown) is less than 10 percent. Bare ground is 80%, surface rock fragments are 35%, shrub canopy <10%, and basal area for perennial herbaceous plants approximately 1%. Dead branches within individual shrubs are common and standing dead shrub canopy material may be as much as 35% of total woody canopy. Some of the mature bunchgrasses (approximately 25%) commonly have dead centers. Between plant interspaces litter is approximately 5% cover and the depth of litter is approximately one-fourth inch.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	72	120	191
Grass/Grasslike	8	13	22
Forb	4	7	11
<b>Total</b>	<b>84</b>	<b>140</b>	<b>224</b>

### State 2

#### Current Potential 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			8–26	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	7–21	—
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	1–4	
2	Secondary Perennial Grasses			3–7	
	King's eyelashgrass	BLKI	<i>Blepharidachne kingii</i>	1–3	—
	squirreltail	ELEL5	<i>Elymus elymoides</i>	1–3	—
Forb					
3	Perennial			3–11	
	King's eyelashgrass	BLKI	<i>Blepharidachne kingii</i>	1–3	—
	globemallow	SPHAE	<i>Sphaeralcea</i>	1–3	—
	princesplume	STANL	<i>Stanleya</i>	1–3	—
4	Annual			0–7	
Shrub/Vine					
5	Primary Shrubs			73–138	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	56–84	—
	Shockley's desert-thorn	LYSH	<i>Lycium shockleyi</i>	7–21	—
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	3–11	—
6	Secondary Shrubs			7–28	
	Shockley's goldenhead	ACSH	<i>Acamptopappus shockleyi</i>	1–4	—
	Parry's saltbush	ATPA3	<i>Atriplex parryi</i>	1–4	—
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	1–4	—
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	1–4	—
	spiny menodora	MESP2	<i>Menodora spinescens</i>	1–4	—
	Nevada dalea	PSPO	<i>Psorothamnus polydenius</i>	1–4	—
	horsebrush	TETRA3	<i>Tetradymia</i>	1–4	—

## Animal community

### Livestock Interpretations:

This site is marginally suited for livestock grazing due to low forage production. Grazing management should be keyed to perennial grass and palatable shrub production. 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. When actively growing, galleta provides good to excellent forage for cattle and horses and fair forage for domestic sheep. Although not preferred, all classes of livestock may use galleta when it is dry. Domestic sheep show greater use in winter than summer months and typically feed upon central portions of galleta tufts, leaving coarser growth around the edges. Galleta may prove somewhat coarse to domestic sheep. 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 Shockley's wolfberry browse is presumably fair to low. This species is used as forage only when more desirable species are unavailable. The fruit, however, appears to be moderately palatable. 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. 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.

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. The fruit, however, appears to be moderately palatable. The red berries are eaten by some birds and mammals. Berries of this plant constituted 2 percent of the diet of chukar partridges. 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.

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. 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. Desert bighorn sheep of the Mojave Desert utilize galleta as forage. Galleta provides moderately palatable forage when actively growing and relatively unpalatable forage during dormant periods. Galleta provides poor cover for most wildlife species.

## Hydrological functions

Rills and water flow patterns are none to rare in areas recently subjected to intense summer rainfall and on steep slopes. Pedestals are rare with occurrence typically limited to area within water flow patterns. Fine litter (foliage from grasses and annual and perennial forbs) are expected to move the distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events. Sparse shrub canopy and associated litter break raindrop impact. Medium to fine textured surface soils have moderate to slow infiltration and medium runoff.

## Recreational uses

This site offers opportunities for photography and nature study. This site has potential for off-road vehicle use and hiking.

## Other products

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. Indian ricegrass was traditionally eaten by some Native American peoples. The Paiutes used seed as a reserve food source.

## Type locality

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Location 1: Esmeralda County, NV

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Township/Range/Section	T2N R38E S10
General legal description	Approximately 2 miles east of Silver Peak exit (Blair Junction) off US Hwy 95, Esmeralda County, Nevada. This site also occurs in Mineral and 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

HA/GD/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)	GK BRACKLEY
Contact for lead author	State Rangeland Management Specialist
Date	06/20/2006
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:** Rills are none to rare. A few can be expected on steeper slopes after summer convection storms.

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2. **Presence of water flow patterns:** Water flow patterns none to rare. A few can be expected on steeper slopes after summer convection storms.

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3. **Number and height of erosional pedestals or terracettes:** Pedestals are rare with occurrence typically limited to areas within water flow patterns.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground to 60% depending on amount of surface rock fragments.

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5. **Number of gullies and erosion associated with gullies:** None

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None
- 
7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) is expected to move the distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events.
- 
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 2 to 4 on most soil textures found on this site. (To be field tested.)
- 
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is typically weak medium subangular blocky. Soil surface colors are pale browns and the soils are typified by an ochric epipedon. Organic carbon of the surface 2 to 3 inches is less than to 1 percent.
- 
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sparse shrub canopy and associated litter break raindrop impact. Medium to fine textured surface soils have moderate to slow infiltration and medium runoff.
- 
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** Compacted layers are not typical. Platy or massive sub-surface horizons, subsoil argillic horizons or hardpans shallow to the surface are not to be interpreted as compacted layers.
- 
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: Reference Plant Community: Low-statured salt desert shrubs >> deep-rooted, cool season, bunchgrasses. (By above ground production)
- Sub-dominant: Rhizomatous grass = shallow-rooted, perennial bunchgrasses = deep-rooted, perennial forbs = fibrous, shallow-rooted, perennial forbs = annual forbs. (By above ground production)
- Other:
- Additional:
- 
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs common and standing dead shrub canopy material may be as much as 35% of total woody canopy; mature bunchgrasses commonly ( $\pm 25\%$ ) have dead centers.
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14. **Average percent litter cover (%) and depth ( in):** Between plant interspaces (5-15%) and depth ( $\pm 1/4$ -inch).
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-**

**production):** For normal or average growing season (February thru April [May])  $\pm$  125lbs/ac.

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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: Potential invaders include halogeton, Russian thistle, annual mustards, and cheatgrass are invaders on this site.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average and above average growing season years. Little growth or reproduction occurs during drought years.
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