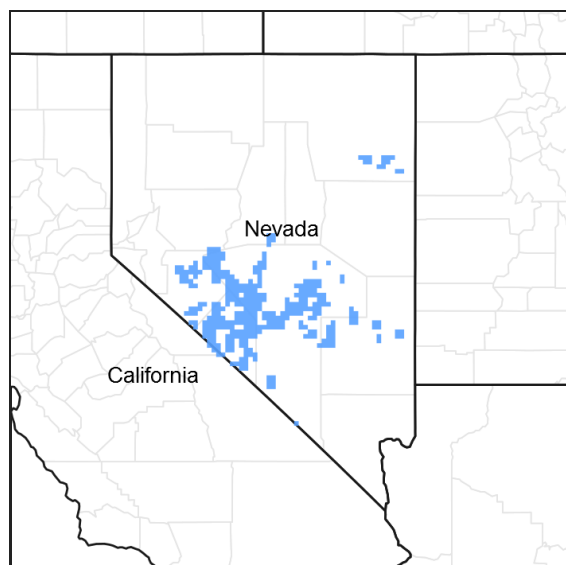


## **Ecological site R029XY012NV SANDY 5-8 P.Z.**

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.



**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**

R029XY016NV	<b>LOAMY UPLAND 5-8 P.Z.</b>
R029XY017NV	<b>LOAMY 5-8 P.Z.</b>
R029XY042NV	<b>COARSE SILTY 5-8 P.Z.</b>
R029XY076NV	<b>SODIC FLAT</b>

### **Similar sites**

R027XY009NV	<b>SANDY 5-8 P.Z.</b> HECO26 major grass; PSPO important shrub
R029XY080NV	<b>SHALLOW SANDY LOAM 5-8 P.Z.</b> MESP2 codominant shrub
R029XY034NV	<b>SANDY 3-5 P.Z.</b> Less productive site; LYCIU important shrub
R029XY046NV	<b>SANDY LOAM 5-8 P.Z.</b> Less productive site; more ATCA2 and KRLA2

**Table 1. Dominant plant species**

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

## Physiographic features

This site occurs on sand sheets, fan skirts, and fan remnants on all exposures. Slopes range from 0 to 15 percent. Elevations are 4000 to 7000 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Sand sheet (2) Fan skirt (3) Fan remnant
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Rare
Ponding frequency	None
Elevation	1,219–2,134 m
Slope	0–15%
Aspect	Aspect is not a significant factor

## Climatic features

The climate associated with this site is semiarid, characterized by cold, moist winters and warm, somewhat dry summers. Average annual precipitation is 5 to about (7)8 inches. Mean annual air temperature is 52 to 58 degrees F. The average growing season is about 140 to 240 days.

**Table 3. Representative climatic features**

Frost-free period (average)	240 days
Freeze-free period (average)	0 days
Precipitation total (average)	203 mm

## Influencing water features

There are no influencing water features associated with this site.

## Soil features

Soils associated with this site are typically very shallow to very deep loams of mixed origin. Other soils with a thick layer, greater than 20 inches, of overblown or alluvial sand may also support this site. These soils have rapid infiltration and percolation rates, very low to moderate available water capacity and are well to excessively well drained with medium runoff. These soils are fragile and subject to wind erosion if misused. Soil series associated with this site include: Berent, Bienfait, Cliffdown, Downeyville, Fang, Jevets, Koyen, Leo, Piltdown, Stumble, and Sundown.

**Table 4. Representative soil features**

Surface texture	(1) Very gravelly loam (2) Gravelly sandy loam (3) Very gravelly fine sandy loam
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Family particle size	(1) Loamy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Rapid
Soil depth	10–213 cm
Surface fragment cover <=3"	2–23%
Surface fragment cover >3"	2–9%
Available water capacity (0-101.6cm)	2.29–13.97 cm
Calcium carbonate equivalent (0-101.6cm)	0–40%
Electrical conductivity (0-101.6cm)	0–32 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–60
Soil reaction (1:1 water) (0-101.6cm)	6.6–9.6
Subsurface fragment volume <=3" (Depth not specified)	2–82%
Subsurface fragment volume >3" (Depth not specified)	2–9%

## Ecological dynamics

Where management results in abusive livestock use by cattle and /or feral horses, Douglas rabbitbrush, littleleaf horsebrush, and Nevada dalea increase, while Indian ricegrass, fourwing saltbush, and winterfat, decrease. Species likely to invade this site are annuals such as brome grass and Russian thistle. If the vegetative cover is removed, this site is subject to severe wind erosion.

### Fire Ecology:

Fourwing saltbrush is most common under regimes of infrequent fire and moderate browsing. Fire top-kills or kills fourwing saltbrush, depending upon ecotype. Fourwing saltbrush may sprout after top-kill. 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. 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. Sand dropseed is usually killed or topkilled by fire. Sand dropseed has the potential for postfire regeneration and seedling establishment as seeds within burned areas may remain viable. However postfire regeneration responses may differ according to relative abiotic and biotic site characteristics. Needleandthread is top-killed by fire. It may be killed if the aboveground stems are completely consumed. Needleandthread is classified as slightly to severely damaged by fire. Needleandthread sprouts from the caudex following fire, if heat has not been sufficient to kill underground parts. Recovery usually takes 2 to 10 years.

## State and transition model

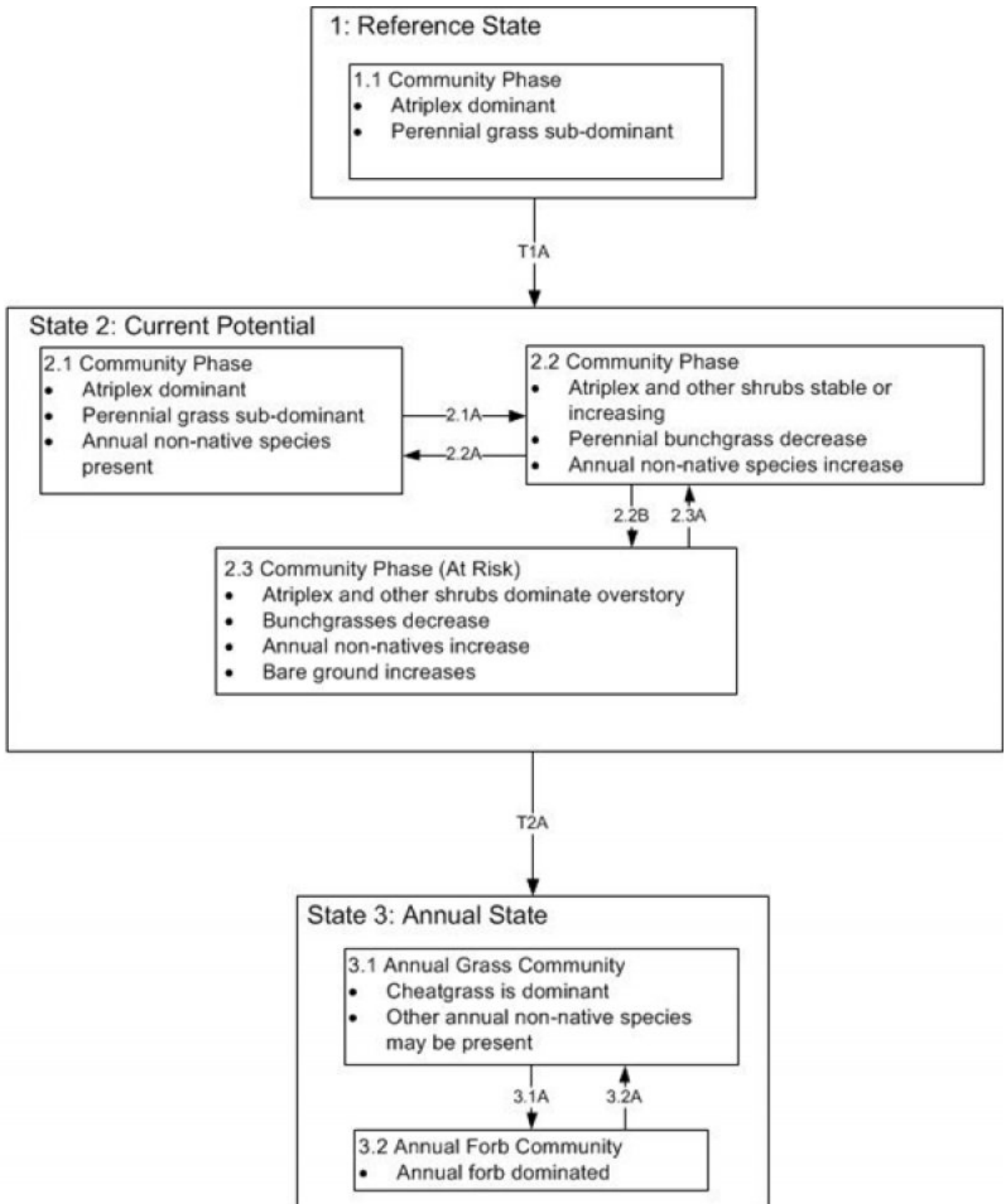


Figure 3. DRAFT STM

## 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 Indian ricegrass and fourwing saltbush. Other important species on this site are sand dropseed, needleandthread and winterfat. Potential vegetative composition is about 70% grasses, 5% forbs and 25% 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	235	392	628
Shrub/Vine	84	140	224
Forb	17	28	45
<b>Total</b>	<b>336</b>	<b>560</b>	<b>897</b>

### State 2

#### Current Potental 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			319–504	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	280–392	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	28–84	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	11–28	
2	Secondary Perennial Grasses			11–45	
	threeawn	ARIST	<i>Aristida</i>	2–9	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	2–9	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	2–9	–
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	2–9	–
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	2–9	–
Forb					
3	Perennial			11–45	
	globemallow	SPHAE	<i>Sphaeralcea</i>	3–15	–
	princesplume	STANL	<i>Stanleya</i>	3–15	–
	birdcage evening primrose	OEDE2	<i>Oenothera deltoides</i>	3–11	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	2–9	–
4	Annual			1–28	
Shrub/Vine					
5	Primary Shrubs			67–185	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	56–140	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	11–45	–
6	Secondary Shrubs			20–59	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	6–17	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	6–17	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	6–17	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	6–17	–
	bud sagebrush	PIDE4	<i>Picrothamnus desertorum</i>	6–17	–
	Nevada dalea	PSPO	<i>Psorothamnus polydenius</i>	6–17	–
	horsebrush	TETRA3	<i>Tetradymia</i>	6–17	–

## Animal community

### Livestock Interpretations:

This site is suitable for livestock grazing. Grazing management should be keyed to winterfat and perennial grass 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. Sand dropseed provides fair to good forage for livestock. Sand dropseed's value as livestock forage is regional and dependent upon season. If fall rains are adequate, sand dropseed may have a period of renewed growth, producing new shoots in old sheaths. The persistent green base throughout winter makes sand dropseed an important desert winter range plant. In general, sand dropseed provides fair winter forage for domestic sheep and is most preferred by cattle of dune rangelands. Needleandthread provides highly palatable forage, especially in the spring before fruits have developed. Needlegrasses are grazed in the fall only if the fruits are softened by rain. Fourwing saltbush is one of the most palatable shrubs in the West. Its protein, fat, and carbohydrate levels are comparable to alfalfa. It provides nutritious forage for all classes of livestock. Palatability is rated as good for domestic sheep and domestic goats; fair for cattle; fair to good for horses in winter, poor for horses in other seasons. 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:

Fourwing saltbush provides valuable habitat and year-round browse for wildlife. Fourwing saltbush also provides browse and shelter for small mammals. Additionally, the browse provides a source of water for black-tailed jackrabbits in arid environments. Granivorous birds consume the fruits. Wild ungulates, rodent and lagomorphs readily consume all aboveground portions of the plant. Palatability is rated good for deer, elk, pronghorn and bighorn sheep. Winterfat is an important forage plant for wildlife, especially during winter when forage is scarce. Winterfat seeds are eaten by rodents and are 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. Indian ricegrass is eaten by pronghorn in moderate amounts whenever available. 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. 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. Sand dropseed provides poor forage for wildlife. Large mammals in general show little use of sand dropseed. Sand dropseed is not preferred by pronghorn, elk, and deer. Small mammals and birds utilize sand dropseed to a greater extent than large mammals. Needleandthread is moderately important spring forage for mule deer, but use declines considerably as more preferred forages become available.

### Hydrological functions

Runoff is medium. Permeability is 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

Fourwing saltbush is traditionally important to Native Americans. They ground the seeds for flour. The leaves, placed on coals, impart a salty flavor to corn and other roasted food. Top-growth produces a yellow dye. Young leaves and shoots were used to dye wool and other materials. The roots and flowers were ground to soothe insect bites. Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used the seed as a reserve food source. Sand dropseed is an edible grass used by Native Americans.

### Other information

Fourwing saltbush is widely used in rangeland and riparian improvement and reclamation projects, including burned area recovery. It is probably the most widely used shrub for restoration of winter ranges and mined land reclamation. 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. Sand dropseed is recommended as a component of grass seed mixtures for sandy and heavy to semi-sandy soils. Good results are seen reseeding dry low lands receiving less than 9 inches (230mm) of precipitation within rangelands of Nevada. Needleandthread is useful for stabilizing eroded or degraded sites.

### Type locality

Location 1: Nye County, NV	
Township/Range/Section	T2N R45E S15

General legal description	Approximately 3 miles south of US Highway 6. Enclosure on south side of dirt road leading east (1.5 miles) off road to Tonopah Test Site. Ralston Valley area, Nye County, Nevada.
Location 2: Nye County, NV	
Township/Range/Section	T13N R36E S21
General legal description	East of Gabbs, Lodi Valley area, Nye County, Nevada.

## Other references

Fire Effect 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)	Patti Novak-Echenique
Contact for lead author	State Rangeland Management Specialist
Date	07/19/2013
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:** Rills are none.

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2. **Presence of water flow patterns:** Water flow patterns are none.

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3. **Number and height of erosional pedestals or terracettes:** Pedestals are common with occurrence due to wind scouring.

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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  $\pm$  60-70%.

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5. **Number of gullies and erosion associated with gullies:** Gullies are none.

- 
6. **Extent of wind scoured, blowouts and/or depositional areas:** Slight to moderate wind scouring.
- 
7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) expected to move unsheltered distance during heavy wind. Persistent litter (large woody material) will remain in place except during intense summer convection storms.
- 
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 1 to 3 on the sandy 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 single grained. Soil surface colors are pale browns and soils are typified by an ochric epipedon. Organic matter of the surface 2 to 3 inches is typically <1 percent dropping off quickly below. Organic matter content can be more or less depending on micro-topography.
- 
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial herbaceous plants (especially deep-rooted bunchgrasses [i.e., Indian ricegrass]) slow runoff and increase infiltration. Shrub canopy and associated litter break raindrop impact.
- 
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 none.
- 
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: Deep-rooted, cool season, perennial bunchgrasses > tall shrubs (fourwing saltbush)
- Sub-dominant: associated shrubs > shallow-rooted, cool season, perennial bunchgrasses > deep-rooted, cool season, perennial forbs = fibrous, shallow-rooted, cool season, annual and perennial forbs
- 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 25% of total woody canopy; some of the mature bunchgrasses (<25%) have dead centers.
- 
14. **Average percent litter cover (%) and depth ( in):** Between plant interspaces ( $\pm$  10-15%) and depth (< ¼in.)
- 
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 May)  $\pm 500$  lbs/ac; Favorable years  $\pm 800$  lbs/ac and unfavorable years  $\pm 300$  lbs/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 cheatgrass, halogeton, Russian thistle and annual mustards.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average (or normal) and above average growing season years. Little growth or reproduction occurs during extended or extreme drought conditions.
-