

Ecological site R029XY041NV

DRY WASH

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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

R029XY017NV	LOAMY 5-8 P.Z.
R029XY034NV	SANDY 3-5 P.Z.
R029XY035NV	LOAMY 3-5 P.Z.

Similar sites

R029XY072NV	<b>VALLEY WASH</b> ATCA2-AMER codominant shrubs
R029XY158NV	<b>COARSE LOAMY 8-10 P.Z.</b> Stable plant community; ARTRW-ATCA2 codominant; ERNA10 minor shrub, if present
R029XY009NV	<b>UPLAND WASH</b> ARTR2 dominant shrub; higher elevations

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>nauseosa</i> (2) <i>Atriplex canescens</i>

## Physiographic features

This site occurs on drainage ways, channels, and inset fans having intermittent water courses. Slopes range from 0 to 15 percent, but slope gradients of 2 to 8 percent are typical. Elevations are 3900 to about 6300 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Drainageway (2) Channel (3) Inset fan
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to occasional
Ponding frequency	None
Elevation	1,189–1,920 m
Slope	0–15%
Ponding depth	0 cm
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 5 to 8 inches. Mean annual air temperature is 43 to 59 degrees F. The average growing season is about 100 to 150 days.

**Table 3. Representative climatic features**

Frost-free period (average)	150 days
Freeze-free period (average)	0 days
Precipitation total (average)	203 mm

## Influencing water features

This site receives additional moisture by flooding due to its occurrence in drainageways and inset fans.

## Soil features

The soils associated with this site are very deep alluvium from mixed rock sources. They are quite variable as they continue to be re-worked by water. These soils typically have high amounts of gravels and cobbles distributed throughout the soil profile as well as at the surface. The water intake rates are high, available water capacity is low to moderate, runoff is negligible to high and soils are well drained. The soil series that are associated with this site include: Bluewing, Fivemile, Inmo, Itme, Izo, Leo and Stargo.

**Table 4. Representative soil features**

Surface texture	(1) Very gravelly loamy coarse sand (2) Very gravelly loamy sand (3) Extremely stony very fine sandy loam
Family particle size	(1) Sandy
Drainage class	Well drained to excessively drained
Permeability class	Slow to very rapid

Soil depth	183 cm
Surface fragment cover <=3"	45–77%
Surface fragment cover >3"	2–25%
Available water capacity (0-101.6cm)	3.05–10.92 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
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)	7.4–9
Subsurface fragment volume <=3" (Depth not specified)	5–66%
Subsurface fragment volume >3" (Depth not specified)	2–24%

## Ecological dynamics

This site is frequently disturbed by intense, natural, flood flows. Rubber rabbitbrush, burrobrush, and horsebrush are the dominant shrubs as the plant community begins to stabilize following major disturbance. Species likely to invade this site are annuals such as cheatgrass and mustards.

### Fire Ecology:

Rubber rabbitbrush is often top-killed by fire. Rubber rabbitbrush is a fire-adapted species that is typically unharmed or enhanced by fire. Recovery time is often rapid to very rapid. Rubber rabbitbrush is often one of the first species to colonize burned areas by sprouting or from off-site seed. Fire top-kills or kills fourwing saltbush, depending upon ecotype. Fourwing saltbush may sprout after top-kill. Burrobrush establishes after fire via off-site seeds and sprouting (sprout origin unspecified). Because it seeds prolifically, burrobrush can quickly colonize burned sites. Burrobrush is often top-killed by fire. Fire top-kills littleleaf horsebrush. Horsebrush species are rarely killed by fire. Littleleaf horsebrush is dormant in summer and fall, so fires in those seasons have almost no effect on established plants. When top-killed by fire, littleleaf horsebrush establishes by sprouting from the root crown. Greasewood may be killed by severe fires, but it commonly sprouts soon after low to moderate-severity fire. Nevada ephedra generally sprouts after fire damages aboveground vegetation. Underground regenerative structures commonly survive when aboveground vegetation is consumed by fire. However, severe fires may kill shallowly buried regenerative structures.

Fire typically destroys aboveground parts of wolfberry, but the degree of damage to the plant depends on fire severity. 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.

## State and transition model

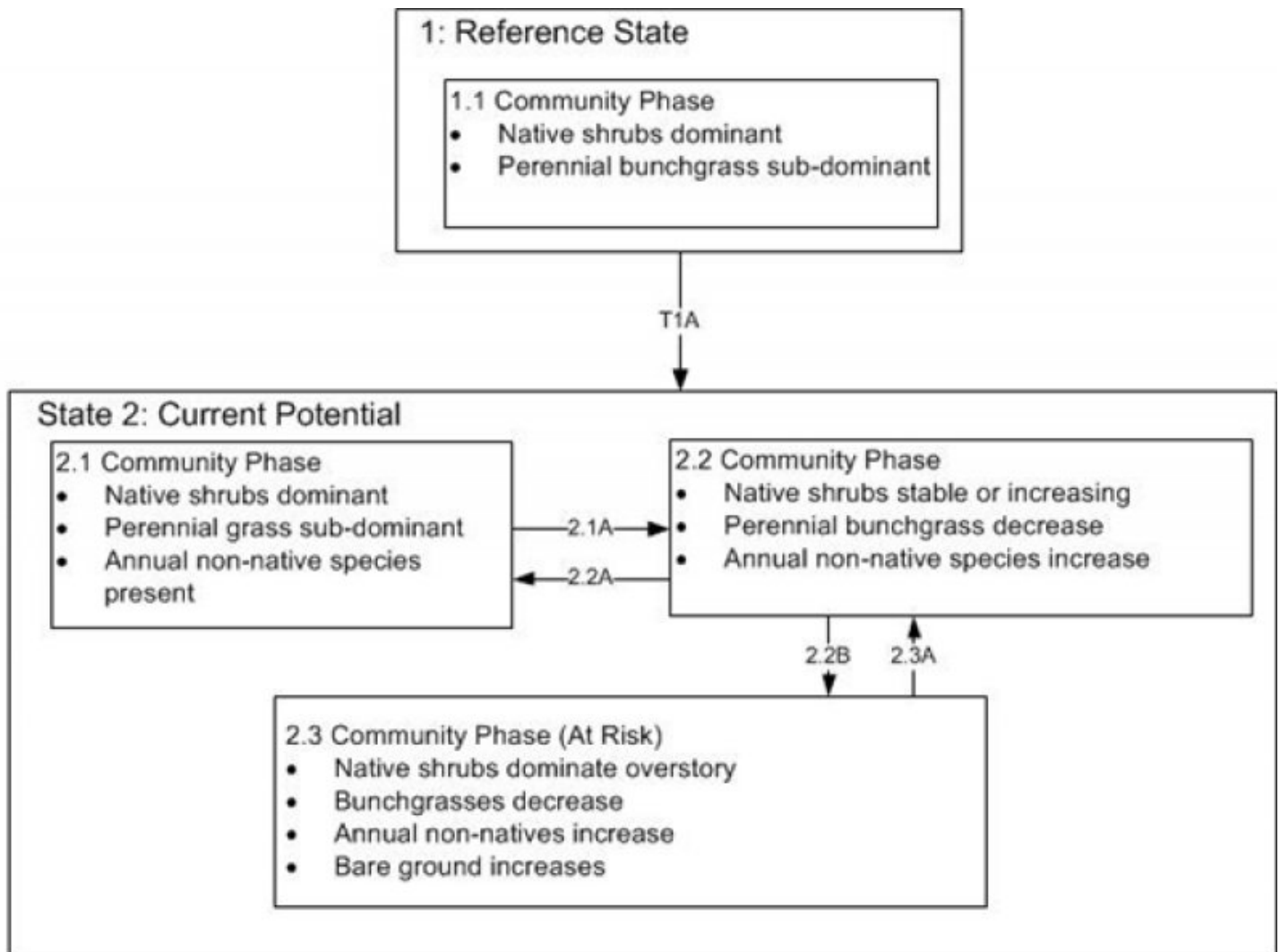


Figure 3. DRAFT STM

**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**

Figure 4. DRAFT STM LEGEND

## State 1

### Reference State

## Community 1.1

### Reference Plant Community

The reference plant community is unstable but is usually dominated by rubber rabbitbrush, fourwing saltbush, Indian ricegrass and burrobrush. Other important species are littleleaf horsebrush, Bailey's greasewood, Nevada ephedra, and Shockley's wolfberry. Potential vegetative composition is about 20% grasses, 10% forbs and 70% shrubs.

Approximate ground cover (basal and crown) is 6 to 12 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	78	235	392
Grass/Grasslike	22	67	112
Forb	11	34	56
<b>Total</b>	<b>111</b>	<b>336</b>	<b>560</b>

## State 2 Current Potentital State

### Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Primary Perennial Grasses</b>			7–34	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	7–34	–
2	<b>Secondary Perennial Grasses</b>			7–50	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	2–17	–
	threeawn	ARIST	<i>Aristida</i>	2–17	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	2–17	–
	needle and thread	HECO26	<i>Hesperostipa comata</i>	2–17	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	2–17	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	2–17	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	2–17	–
<b>Forb</b>					
3	<b>Perennial</b>			17–50	
	threeawn	ARIST	<i>Aristida</i>	2–17	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	2–17	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	2–17	–
	buckwheat	ERIOG	<i>Eriogonum</i>	2–10	–
	beardtongue	PENST	<i>Penstemon</i>	2–10	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	2–10	–
4	<b>Annual</b>			0–17	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	2–17	–
<b>Shrub/Vine</b>					
5	<b>Primary Shrubs</b>			104–303	
	rubber rabbitbrush	ERNAN5	<i>Ericameria nauseosa ssp. nauseosa var. nauseosa</i>	34–118	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	17–50	–
	littleleaf borebrush	TEGL	<i>Tetradymia glabrata</i>	17–34	–

	horsebrush				
	burrobrush	HYMEN3	<i>Hymenoclea</i>	17–34	–
	desert-thorn	LYCIU	<i>Lycium</i>	7–17	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	7–17	–
	buckwheat	ERIOG	<i>Eriogonum</i>	2–10	–
	beardtongue	PENST	<i>Penstemon</i>	2–10	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	2–10	–
6	<b>Secondary Shrubs</b>			17–50	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	2–10	–
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	2–10	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	2–10	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	2–10	–
	Nevada dalea	PSPO	<i>Psoralea polydenia</i>	2–10	–
	greasewood	SAVE4	<i>Sarcobatus vermiculatus</i>	2–10	–

## Animal community

### Livestock Interpretations:

This site is suited for livestock grazing. Grazing management should be keyed to Indian ricegrass 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.

In general, livestock forage only lightly on this species during the summer, but winter use can be heavy in some locations. Fall use is variable, but flowers are often used by livestock. A few leaves and the more tender stems may also be used. 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. Burrobrush is palatable to livestock species in the spring and early summer. Little leaf horsebrush is non-desirable to livestock species. 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. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats.

Wolfberry is sometimes used as forage by livestock. Palatability of 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.

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:

Dry washes provide habitat and corridor for several species of birds, mammals and reptiles. Wildlife forage only lightly on rubber rabbitbrush during the summer, but winter use can be heavy in some locations. Fall use is variable, but flowers are often used by wildlife. A few leaves and the more tender stems may also be used. The forage value of rubber rabbitbrush varies greatly among subspecies and ecotypes. 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. Burrobrush and littleleaf horsebrush are undesirable to wildlife species. 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. Mule deer, bighorn sheep, and pronghorn browse Nevada ephedra, especially

in spring and late summer when new growth is available.

Palatability of 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. Wolfberry is sometimes used as forage by feral burros. The red berries are eaten by some birds and mammals. Berries of this plant constituted 2 percent of the diet of chukar partridges. In desert washes wolfberry grows in dense thorny thickets which provide good cover for quail and other small wildlife. 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 negligible to high. permeability is slow to rapid.

Recreational uses

This site offers opportunities for photography and nature study. This site has potential for off-road vehicle use, upland game bird hunting and hiking.

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. The Seri Indians use 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. Seri also drank the tea to relieve pain in the lungs and trachea, and to reduce swelling. Additionally, they use white burrobrush as a remedy for rheumatism. The leaves, seeds and stems of greasewood are edible. Native Americans used Nevada ephedra as a tea to treat stomach and kidney ailments. Native Americans used the fleshy berries of wolfberry either fresh or boiled and then dried them for later use. This shrub is also used as an ornamental valued chiefly for its showy red berries. Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source.

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. Horsebrushes provide critically needed ground cover and protection from erosion on dry sites that are otherwise often sparsely vegetated. Nevada ephedra is useful for erosion control, and seedlings have been successfully planted onto reclaimed strip mines, with survival ranging from 12 to 94%. Atrazine may be effective in controlling Nevada ephedra, though some plants can survive through crown sprouting. Irrigation may increase control by atrazine.

Type locality

Location 1: Esmeralda County, NV	
Township/Range/Section	T5S R37E S6
General legal description	Fish Lake Valley area, about 12 miles southeast of Dyer, Esmeralda County, Nevada.
Location 2: Esmeralda County, NV	
Township/Range/Section	T6S R38E S5
General legal description	Palmetto Wash area, about 15 miles west of Lida, Esmeralda County, Nevada. This site also occurs in Mineral and Nye Counties, 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

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## 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:** None to rare. A few rills may occur after intense summer convection storms.

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2. **Presence of water flow patterns:** Waterflow patterns are rare to few due to run-in from adjacent landscapes.

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3. **Number and height of erosional pedestals or terracettes:** Terracettes caused by litter obstruction can be common.

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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  $\pm$  20-30% 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

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7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage of grasses and annual & perennial forbs) only expected to move during periods of flooding by adjacent streams. Persistent litter (large woody material) will remain in place except during peak flooding periods.



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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values will range from 2 to 4. (To be field tested.)
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is typically weak platy. Soil surface colors are light gray and soils have an ochric epipedon. Organic matter of the surface 2 to 4 inches is typically less than 1 percent dropping off quickly below.
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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. Shrubs and perennial bunchgrasses also aid in infiltration.
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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):** None - Platy or massive subsurface layers are not to be interpreted as compaction.
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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: Tall shrubs (rubber rabbitbrush, burrobrush, fourwing saltbush) > associated shrubs
- Sub-dominant: deep-rooted, cool season, perennial bunchgrasses (Indian ricegrass) > shallow-rooted, cool season, perennial bunchgrasses > deep-rooted, cool season, perennial forbs > annual forbs
- Other:
- Additional:
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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.
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14. **Average percent litter cover (%) and depth ( in):** Within plant interspaces 10-15% and depth <1/4 in
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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 (thru June)  $\pm$  300 lbs/ac; Favorable years  $\pm$  100 lbs/ac and unfavorable years  $\pm$  500 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 saltcedar, cheatgrass, annual mustards, and halogeton.

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17. **Perennial plant reproductive capability:** All functional groups should reproduce in most years. Reduced growth and reproduction will occur during extreme or extended drought periods.
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