

Ecological site R023XY318OR **LOAMY 12-16 PZ**

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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.

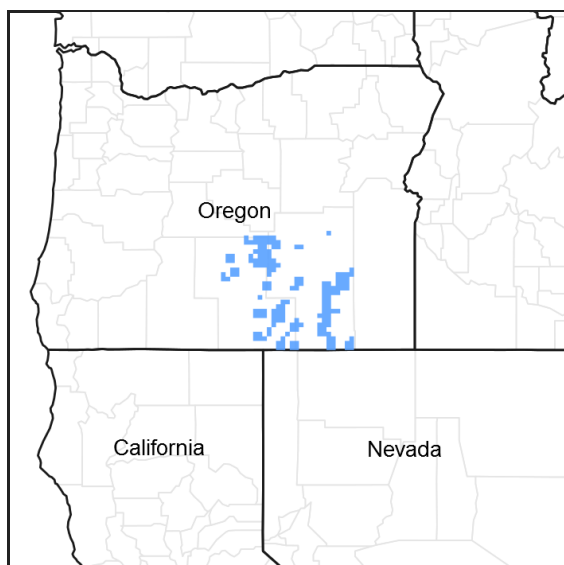


Figure 1. Mapped extent

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

R023XY216OR	CLAYPAN 12-16 PZ Claypan 12-16" PZ
R023XY408OR	ROCKY RIDGES 12-16 PZ Rocky Ridges 12-16" PZ
R023XY410OR	GRAVELLY RIDGE 12-16 PZ Gravelly Ridge 12-16" PZ

Similar sites

R023XY501OR	SHALLOW LOAM 16-25 PZ Loamy 16-25" PZ (higher ppt)
R023XY502OR	LOAMY 25-35 PZ Loamy 25-35" PZ (higher ppt)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata ssp. vaseyana</i>

Herbaceous	(1) <i>Festuca idahoensis</i>
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Physiographic features

This site typically occurs in mountainous terrain on ridges and mountain shoulders. Slopes range from 2 to 35%, but typically the upper limit is 20%. Elevations range from 4500 feet to 8000 feet.

Table 2. Representative physiographic features

Landforms	(1) Ridge
Flooding frequency	None
Ponding frequency	None
Elevation	1,372–2,438 m
Slope	2–20%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 12 to 16 inches. The precipitation occurs mostly in the form of snow during the months of December to March. Spring rains are common. The soil temperature regimes are frigid and cryic. Extreme air temperatures can range from 90 degrees F. to -30 degrees F. The frost-free period is about 30 to 70 days. The optimum period of plant growth is mid-April through mid-July.

Table 3. Representative climatic features

Frost-free period (average)	70 days
Freeze-free period (average)	0 days
Precipitation total (average)	406 mm

Influencing water features

Soil features

The soils of this site are moderately deep to deep over bedrock, medium or fine textured, and well drained. The soils typically lack a clay increase within the soil profile but in those few soils that do, the increase occurs at depths below 12 inches. The soils have a thick, dark colored, medium textured surface 10 to 40 inches thick. The amount of rock fragments is variable. Permeability is moderate for those soils lacking an argillic horizon (clay increase) and moderate to slow or very slow for soils which have an argillic horizon. The available water holding capacity (AWC) is about 1 to 5 inches for the profile.

Table 4. Representative soil features

Parent material	(1) Residuum–basalt (2) Colluvium–welded tuff
Surface texture	(1) Loam (2) Extremely stony loam
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow to moderate
Soil depth	51–152 cm
Surface fragment cover <=3"	5–30%

Surface fragment cover >3"	0–35%
Available water capacity (0-101.6cm)	2.54–11.94 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	6.6–7.8
Subsurface fragment volume <=3" (Depth not specified)	6–23%
Subsurface fragment volume >3" (Depth not specified)	5–35%

Ecological dynamics

Range in Characteristics:

The reference native plant community is dominated by Idaho fescue. Mountain big sagebrush will often dominate the site. Vegetative composition is about 75 percent grasses, 10 percent forbs, and 15 percent shrubs.

Areas which receive a greater amount of moisture may contain substantial amounts of mountain brome and bluegrasses. Areas with greater amount of rock may contain a greater percentage of Sandberg bluegrass in the potential plant community. Increased thickness of the soil surface increases the site productivity. An increase in surface gravels will favor Thurber's needlegrass.

Five states have been identified for this site: a reference state; a state with the presence of annuals; a state that has juniper dominating site resources; a state that is juniper dominant; and a state with annual dominance.

Reference State: Plant community phase change is driven by fire. Mountain and basin big sagebrush declines after fire while Idaho fescue, Thurber's needlegrass and other grasses increase. Rabbitbrush may temporarily increase after fire. Time facilitates the reintroduction of sagebrush. The introduction of invasive annual grasses and forbs transitions into state 2.

State 2: Compositionally similar to the reference state with a trace of cheatgrass and annual weeds. Ecological function has not changed, however the resiliency of the state has been reduced by the presence of invasive weeds. Prescribed grazing maintains state dynamics. Mismanagement of grazing favors sagebrush and Sandberg's bluegrass while cheatgrass increases. Prescribed grazing can reverse the trend. Reduction in fire frequency facilitates juniper encroachment in both poor and good condition communities. Fire reduces or eliminates juniper and with time sagebrush reestablishes. When juniper out-competes sagebrush and the herbaceous plant community, the site will transition to state 3.

State 3: Juniper dominates the site resources. Sagebrush is dead or dying. Sandberg's bluegrass is the dominant species in the interspace and bare ground is significant. The perennial grass component is significantly reduced in both density and productivity. Idaho fescue may be present under the canopy of trees (north slope typically). Spatial and temporal energy capture and nutrient cycling has been truncated. Infiltration may be reduced due to lack of ground cover. Juniper woodland development is complete and soil loss and erosion drive site processes as the site goes into state 4.

State 4: Juniper dominated state. Soil loss is evident and erosion is active. All ecological processes, hydrologic cycle, nutrient cycle and energy capture have been significantly changed preventing the establishment of perennial plants. An abiotic threshold has been crossed. With catastrophic wildfire, state 5 is achieved.

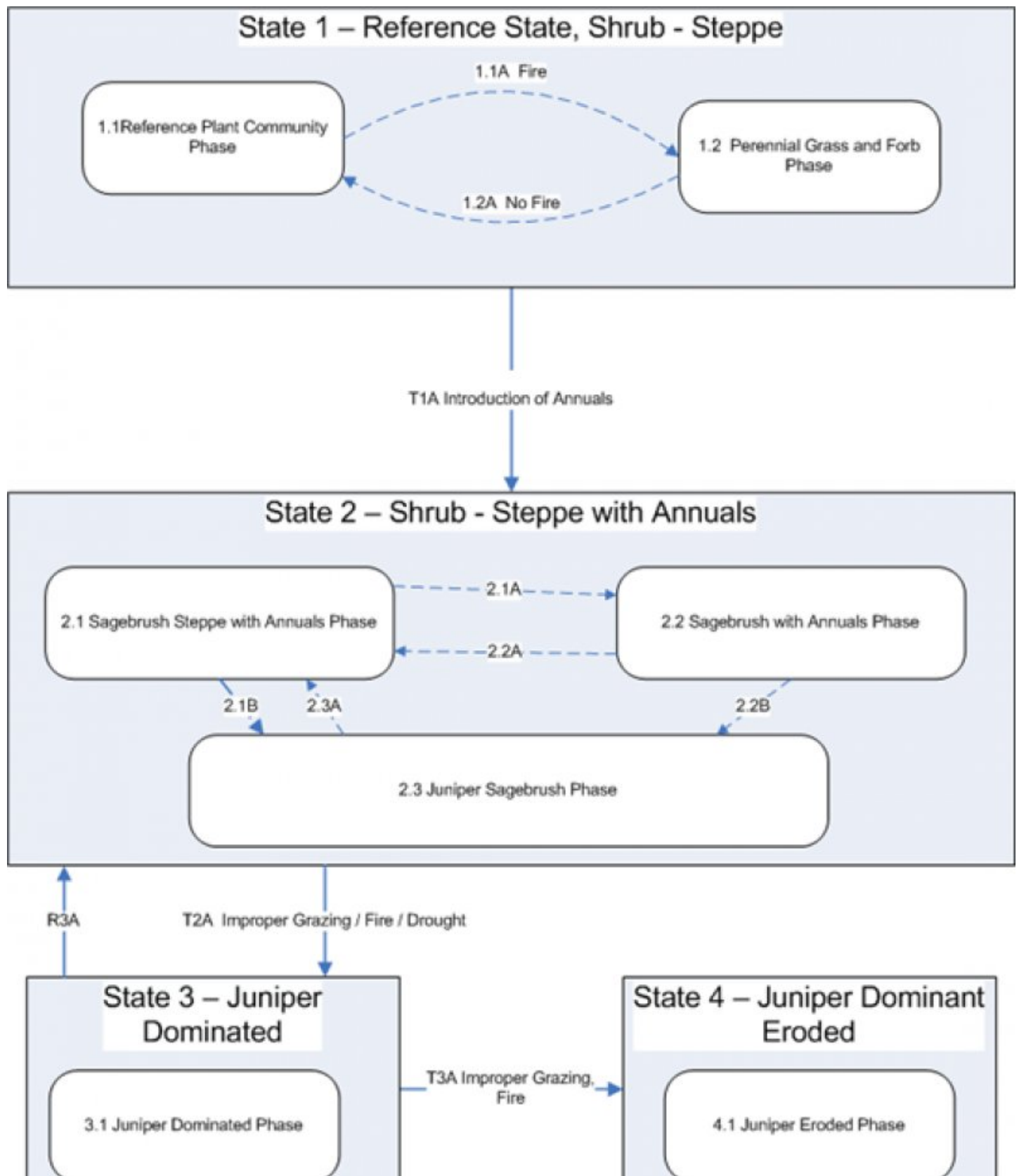
State 5: Cheatgrass dominated plant community with limited to no shrub or perennial grass component. Soil erosion and redistribution along with changes in dynamic soil properties affect the hydrologic cycle and thus the nutrient

cycle. Harsh environmental factors increase state resiliency to change.

Response to Disturbance:

If heavy grazing causes site deterioration, mountain big sagebrush becomes dominant and may form a very dense canopy. Idaho fescue becomes much less dominant and there will be a greater mix of grasses including Thurber's needlegrass and bluegrasses. Some forbs such as lupine, milkvetch, and phlox will also increase. This site may be invaded by western juniper as the ecological condition deteriorates and fires are eliminated. In many areas, juniper may dominate the site.

State and transition model



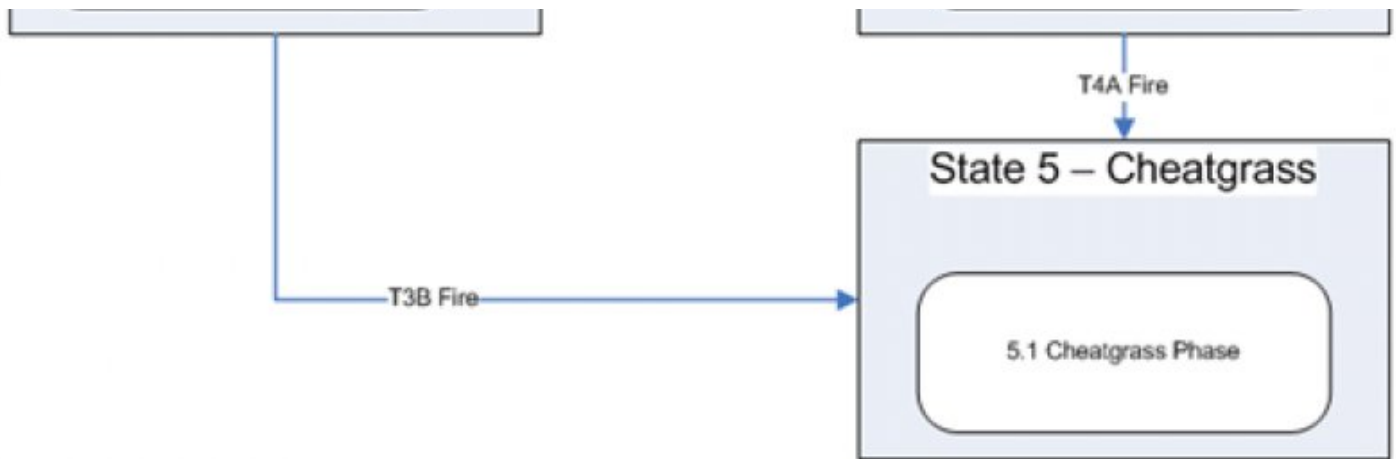


Figure 3. Group 8, STM

State 1
Reference State

Community 1.1
Reference Plant Community

The potential native plant community is dominated by Idaho fescue. Mountain big sagebrush will often dominate the aspect. Vegetative composition is about 75% grass, 10 percent forbs, and 15 percent shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	588	841	1177
Shrub/Vine	118	168	235
Forb	78	112	157
Total	784	1121	1569

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	Perennial, moderately-deep rooted, bunchgrass			448–673	
	Idaho fescue	FEID	<i>Festuca idahoensis</i>	448–673	–
2	Perennial, moderately-deep rooted, bunchgrass			112–392	
	Thurber's needlegrass	ACTH7	<i>Achnatherum thurberianum</i>	56–224	–
	bluebunch wheatgrass	PSSPS	<i>Pseudoroegneria spicata</i> ssp. <i>spicata</i>	56–168	–
5	Perennial, shallow-rooted, bunchgrass			22–56	
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	22–56	–
6	Other perennial grasses, all			22–112	
	western needlegrass	ACOC3	<i>Achnatherum occidentale</i>	0–22	–
	mountain brome	BRMA4	<i>Bromus marginatus</i>	0–22	–
	sedge	CAREX	<i>Carex</i>	0–22	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	0–22	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–22	–

	basin wildrye	LECI4	<i>Leymus cinereus</i>	0–22	–
	Cusick's bluegrass	POCU3	<i>Poa cusickii</i>	0–22	–
Forb					
7	Perennial Forbs			56–112	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	11–22	–
	tapertip hawksbeard	CRAC2	<i>Crepis acuminata</i>	11–22	–
	lupine	LUPIN	<i>Lupinus</i>	11–22	–
	phlox	PHLOX	<i>Phlox</i>	11–22	–
	ragwort	SENEC	<i>Senecio</i>	11–22	–
9	Other Perennial Forbs			22–56	
	agoseris	AGOSE	<i>Agoseris</i>	0–22	–
	pussytoes	ANTEN	<i>Antennaria</i>	0–22	–
	aster	ASTER	<i>Aster</i>	0–22	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–22	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	0–22	–
	fleabane	ERIGE2	<i>Erigeron</i>	0–22	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–22	–
	granite prickly phlox	LIPU11	<i>Linanthus pungens</i>	0–22	–
	beardtongue	PENST	<i>Penstemon</i>	0–22	–
Shrub/Vine					
11	Evergreen			78–168	
	mountain big sagebrush	ARTRV	<i>Artemisia tridentata ssp. vaseyana</i>	56–112	–
	basin big sagebrush	ARTRT	<i>Artemisia tridentata ssp. tridentata</i>	22–56	–
14	Other, Deciduous			0–24	
	yellow rabbitbrush	CHVI8	<i>Chrysothamnus viscidiflorus</i>	0–22	–
	currant	RIBES	<i>Ribes</i>	0–22	–
	common snowberry	SYAL	<i>Symphoricarpos albus</i>	0–22	–
	spineless horsebrush	TECA2	<i>Tetradymia canescens</i>	0–22	–

Animal community

Livestock Grazing:

This grazing site is suitable for use by horses, cattle, and sheep in the spring, summer and fall under a planned grazing system.

Wildlife:

Because of its broad extent this site is very important for wildlife. Big game such as mule deer and pronghorn antelope use this site throughout much of the summer.

Native Wildlife Associated with the Reference Plant Community:

Mule deer, pronghorn antelope, and sage grouse.

Hydrological functions

The soils of this site have a medium infiltration rates and slow to rapid runoff potential. The hydrologic soil groups are B and C.

Recreational uses

Provides excellent fall hunting for chukars, grouse, quail and mule deer.

Wood products

Where juniper has invaded, this site yields firewood, fence posts and other specialty products.

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)	Jeff Repp and Bruce Franssen
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Date	08/17/2012
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** None

3. **Number and height of erosional pedestals or terracettes:** None to very few pedestals

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-35%

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None, Slight to moderate wind erosion hazard

7. **Amount of litter movement (describe size and distance expected to travel):** Fine - limited movement

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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):** Moderately to significantly resistant to erosion: aggregate stability = 4-6
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
Moderately deep to deep loam, stony loam, gravelly clay loam or clay loam soils (10-40 inches thick); weak medium platy to moderate medium granular structure, dry color value 3-5: Moderate OM (1-4%)
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Low to moderate ground cover (35-60%) and gentle to moderate slopes (2-35%) moderately limit rainfall impact and overland flow
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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
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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: Idaho fescue > Thurber needlegrass > shrubs > other grasses > forbs
- Sub-dominant:
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** normal decadence and mortality expected
-
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):** Favorable: 1400, Normal: 1000, Unfavorable: 700 lbs/acre/year at high RSI (RPC)
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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:** Western Juniper readily invades the site. Cheatgrass invades sites that have lost deep rooted perennial grass functional groups.

17. **Perennial plant reproductive capability:** All species should be capable of reproducing annually
