USDA Natural Resources Conservation Service

Ecological site R010XC022OR
SR Silty 9-12 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.

Associated sites

R010XC020OR	**SR Loamy 9-12 PZ** SR Loamy 9-12 PZ
R010XC025OR	**SR Sandy 9-12 PZ** SR Sandy 9-12 PZ
R010XC043OR	**SR South 9-12 PZ** SR South 9-12" PZ
R010XC063OR	**SR Droughty North 9-12 PZ** SR North 9-12 PZ
R010XC064OR	**SR North 9-12 PZ** SR Droughty North 9-12" PZ

Similar sites

R010XC020OR	**SR Loamy 9-12 PZ** SR Loamy 9-12 PZ (different composition - bearded bluebunch dominant, less fine sand in surface)

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Artemisia tridentata ssp. wyomingensis* (2) *Artemisia tridentata ssp. tridentata*
Herbaceous	(1) *Pseudoroegneria spicata ssp. inermis* (2) *Achnatherum thurberianum*

Physiographic features

This site occurs on mid elevation terraces in the Malheur, Owyhee and adjacent Snake River drainage. Slopes typically range from 2 to 12%. Elevations vary from 2,200 to 3,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Hill
Elevation	671–1,067 m
Slope	2–12%
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 9 to 12 inches, most of which occurs in the form of snow during the months of December through March. Localized, occasionally severe, convectional storms occur during the summer. The soil temperature regime is mesic with a mean annual air temperature of 52 degrees F. Temperature extremes range from 100 to -10 degrees F. The frost-free period ranges from 110 to 140 days. The optimum period for plant growth is from April through June.

Table 3. Representative climatic features

Frost-free period (average)	140 days
Freeze-free period (average)	0 days
Precipitation total (average)	305 mm

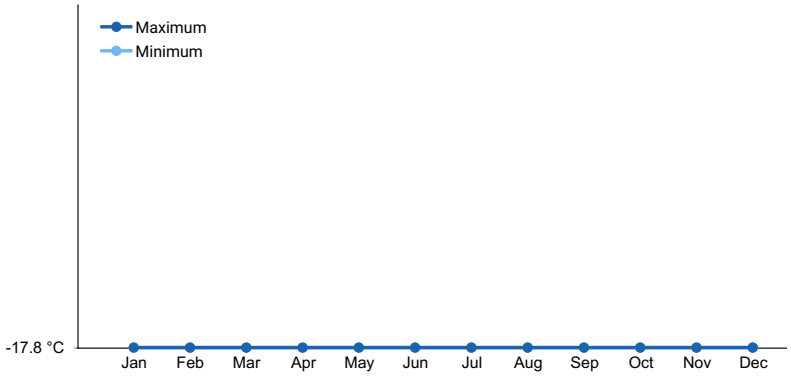

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

The soils of this site are typically moderately deep to deep and well drained. Typically the surface layer is a silt loam to fine sandy loam 8 to 16 inches thick. The subsoil is a silt loam to clay loam 15 to 25 inches thick. Depth to lacustrine or tuffaceous sediments range from 20 to greater than 60 inches. An indurate pan may be present. Permeability is moderate. The available water holding capacity (AWC) is about 4 to 6 inches for the profile. The potential for erosion is moderate.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to moderately well drained
Permeability class	Moderate
Soil depth	51–152 cm
Available water capacity (0-101.6cm)	10.16–15.24 cm

Ecological dynamics

The potential native plant community is dominated by Wyoming big sagebrush and beardless wheatgrass. Thurber’s needlegrass is prominent. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 80 percent grasses, 10 percent forbs and 10 percent shrubs. The approximate ground cover is 70 to 80 percent (basal and crown).

Range in Characteristics:
Beardless wheatgrass increases on silty surfaces. Thurber's needlegrass increases on very fine sandy loam surfaces and on droughtier sites. Needle and thread is present on coarser surfaces. Wyoming big sagebrush is clearly dominant at lower precipitations while basin big sagebrush increases slightly at higher precipitations. Production increases at the upper end of the precipitation zone.

Response to Disturbance:
When the condition of the site deteriorates as a result of over grazing beardless wheatgrass and Thurber's needlegrass rapidly decreases. Wyoming big sagebrush and Sandberg bluegrass increase. Cheatgrass, medusahead, other annuals, biennial weeds and bulbous bluegrass are strong invaders. With fire and continued disturbance sagebrush is severely impacted, rabbitbrush increases slightly and annuals and noxious biennial forbs continue to invade. Bare ground increases and excessive erosion contributes to downstream sedimentation. The excessive erosion is most pronounced in drainage areas where deep incised gulley's form.

States: ARTRW/POSE-BRTE; POSE-POBU/biennial forbs or BRTE-TACA8/biennial forbs (following fire on degraded range)

State and transition model

Ecosystem states

1. Reference State

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference State

Community 1.1
Reference Plant Community

The reference plant community is dominated by Wyoming big sagebrush and beardless wheatgrass. Thurber's needlegrass is prominent. Sandberg bluegrass is the dominant shallow rooted perennial grass. A variety of forbs and shrubs are present. Vegetative composition of the community is approximately 80 percent grasses, 10 percent forbs and 10 percent shrubs. The approximate ground cover is 70 to 80 percent (basal and crown).

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	628	897	1255
Shrub/Vine	78	112	157
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 bunchgrasses**			785–1009	
	beardless wheatgrass	PSSPI	*Pseudoroegneria spicata ssp. inermis*	560–673	–
	Thurber's needlegrass	ACTH7	*Achnatherum thurberianum*	224–336	–
4	**Perennial shallow-rooted bunchgrasses**			22–56	
	Sandberg bluegrass	POSE	*Poa secunda*	22–56	–
5	**Other perennial grasses**			22–336	
	bluebunch wheatgrass	PSSPS	*Pseudoroegneria spicata ssp. spicata*	22–112	–
	needle and thread	HECO26	*Hesperostipa comata*	0–90	–
	basin wildrye	LECI4	*Leymus cinereus*	0–34	–
	squirreltail	ELEL5	*Elymus elymoides*	0–34	–
	Idaho fescue	FEID	*Festuca idahoensis*	0–34	–
	foxtail wheatgrass	PSSA2	×*Pseudelymus saxicola*	0–22	–
Forb					
7	**Perennial forbs**			90–168	
	arrowleaf balsamroot	BASA3	*Balsamorhiza sagittata*	22–34	–
	fleabane	ERIGE2	*Erigeron*	11–22	–
	buckwheat	ERIOG	*Eriogonum*	11–22	–
	desertparsley	LOMAT	*Lomatium*	11–22	–
	lupine	LUPIN	*Lupinus*	11–22	–
	phlox	PHLOX	*Phlox*	11–22	–
	common yarrow	ACMI2	*Achillea millefolium*	11–22	–
9	**Other perennial forbs**			34–135	
	agoseris	AGOSE	*Agoseris*	0–11	–
	onion	ALLIU	*Allium*	0–11	–
	pussytoes	ANTEN	*Antennaria*	0–11	–
	milkvetch	ASTRA	*Astragalus*	0–11	–
	Indian paintbrush	CASTI2	*Castilleja*	0–11	–
	bastard toadflax	COMAN	*Comandra*	0–11	–
	tapertip hawksbeard	CRAC2	*Crepis acuminata*	0–11	–
	common woolly sunflower	ERLA6	*Eriophyllum lanatum*	0–11	–
	haplopappus	HAPLO11	*Haplopappus*	0–11	–
	woodland-star	LITHO2	*Lithophragma*	0–11	–
	stoneseed	LITHO3	*Lithospermum*	0–11	–
	hoary tansyaster	MACA2	*Machaeranthera canescens*	0–11	–
	beardtongue	PENST	*Penstemon*	0–11	–
	deathcamas	ZIGAD	*Zigadenus*	0–11	–
Shrub/Vine					

Shrub/Vine					
11	**Evergreen shrubs**			34–90	
	Wyoming big sagebrush	ARTRW8	*Artemisia tridentata ssp. wyomingensis*	22–56	–
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	11–34	–
15	**Other shrubs**			22–56	
	threetip sagebrush	ARTR4	*Artemisia tripartita*	0–11	–
	yellow rabbitbrush	CHVI8	*Chrysothamnus viscidiflorus*	0–11	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	0–11	–
	spiny hopsage	GRSP	*Grayia spinosa*	0–11	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–11	–
	littleleaf horsebrush	TEGL	*Tetradymia glabrata*	0–11	–

Animal community

Livestock Grazing:
This site is suitable for livestock grazing use in the late winter, spring, and fall under a planned grazing system. Use should be postponed until the soils are firm enough to prevent trampling damage and soil compaction. Grazing management should be keyed for beardless wheatgrass and Thurber's needlegrass. Deferred grazing or rest is recommended at least once every three years.

Native Wildlife Associated with the Potential Climax Community:
This site is commonly used by pronghorn antelope, mule deer, rabbits, rodents, upland birds and various predators. It is a preferred site for sage grouse nesting, rearing and wintering. Antelope and mule deer make excellent use of the site for winter and spring forage.

Hydrological functions

The soils of this site are typically in an upland topographic position. They have moderate runoff potential and medium infiltration rates when the hydrologic cover is high. Hydrologic cover is high when beardless wheatgrass, Thurber's needlegrass and other deep rooted bunchgrass component is >70 percent of potential.

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)	Bob Gillaspy
Contact for lead author	State Rangeland Management Specialist for NRCS Oregon
Date	11/09/2016
Approved by	Bob Gillaspy
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None, moderate to severe sheet & rill erosion hazard.

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2. **Presence of water flow patterns:** None, except following extremely high intensity storms when short (less than 1 meter) flow patterns may appear on steeper slopes. Minimal evidence of past or current soil deposition or erosion.

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3. **Number and height of erosional pedestals or terracettes:** None, except few pedestals or terracettes on steeper slopes.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 5-15% bare ground, typically bare patches are associated with shrubs. Larger bare patches maybe associated with ant mounds, rodent, and/or other natural disturbances.

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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. Wind erosion hazard is moderate.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter size is Small/Fine. Litter movement is limited, minimal, and short, associated with water flow patterns following extremely high intensity storms. Litter also may be moved during intense wind storms.

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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):** Site is slightly to moderately resistant to erosion. Stability class (Herrick et al. 2001) anticipated to be 3-6 at surface under perennial vegetation. Stability class at surface in the interspaces is anticipated to be less than or equal to that under perennial vegetation.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface layer structure is weak fine granular to weak fine subangular blocky. The A horizon has a dry color of 5 - 6 and is 3 - 16 inches thick. The Soil Organic Matter (SOM) content is low (0.75 to 2.5%).

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant foliar cover and basal cover with small gaps between plants should reduce raindrop impact and slow overland flow, providing increased time for infiltration to occur. High herbaceous vegetation on this site will retain more water from precipitation. Vegetative ground cover (70-80%) and gentle slopes (2-15%) 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: Cool Season Deep Rooted Perennial Bunchgrass [Beardless Wheatgrass > Thurber's Needlegrass] > Evergreen Shrubs [sagebrush]

    Sub-dominant: Forbs > other grasses > other shrubs

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Grasses will nearly always show some mortality and decadence. Normal decadence and mortality expected on other plants.

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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):** Annual production: Low 700 lbs/acre, Representative Value 1000 lbs/acre, High 1400 lbs/acre

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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:** Cheatgrass, Medusahead, and bulbous bluegrass invade sites that have lost deep rooted perennial grass functional groups.

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