USDA Natural Resources
Conservation Service

Ecological site R007XY011OR
Sands 8-10 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

R007XY012OR	**Sandy 8-10 PZ** Sandy 8-10" PZ
R007XY013OR	**Sandy Loam 8-10 PZ** Sandy Loam 8-10" PZ
R007XY014OR	**Loamy 8-10 PZ** Loamy 8-10" PZ

Similar sites

R007XY012OR	**Sandy 8-10 PZ** Sandy 8-10" PZ (finer texture)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on level to gently sloping terraces associated with prehjistoric flood levels of the Coulmbia river. The micro rrelic is himmocky or with low dunes that parallel to direction of the prevailing winds.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Alluvial fan
Flooding duration	Extremely brief (0.1 to 4 hours)
Flooding frequency	Rare
Elevation	91–305 m
Slope	0–12%
Water table depth	152 cm
Aspect	Aspect is not a significant factor

Climatic features

The annual precipitation ranges from 8 to 10 inches, most of which occurs as rain during the months of November through April. The mean annual air temperature is about 53 degrees F and extremes range from 115 degress F to -10 degrees F. The frost-free period ranges from 180 to 215 days. The optimum period for plant growth is from mid-March to early June.

Table 3. Representative climatic features

Frost-free period (average)	215 days
Freeze-free period (average)	
Precipitation total (average)	254 mm

Climate stations used

- (1) ELTOPIA 8 WSW [USC00452542], Pasco, WA
- (2) RICHLAND [USC00457015], Richland, WA
- (3) PASCO TRI CITIES AP [USW00024163], Pasco, WA
- (4) KENNEWICK [USC00454154], Kennewick, WA
- (5) ICE HARBOR DAM [USC00453883], Burbank, WA
- (6) SMYRNA [USC00457727], Mattawa, WA
- (7) HERMISTON 2 NW [USC00353818], Hermiston, OR
- (8) WAPATO [USC00458959], Wapato, WA

Influencing water features

Soil features

The soils of this site are moderately deep to very deep, excessively drained mixed sands and loamy fine sands. Where hummocky the soils are often loamy fine sands over sandy subsoils. or occasionally water-laid, laminated sediments. Directional low dunes are mixed sands to fine sands. Where relatively level, the substrata is gravelly. the available water capacity ranges from 2 to 8 inches for the profile. Permeability is rapid in the surface layer. The soils are neutral in reaction. The wind erosion hazard is sever.

Table 4. Representative soil features

Surface texture	(1) Gravelly sand
Family particle size	(1) Sandy

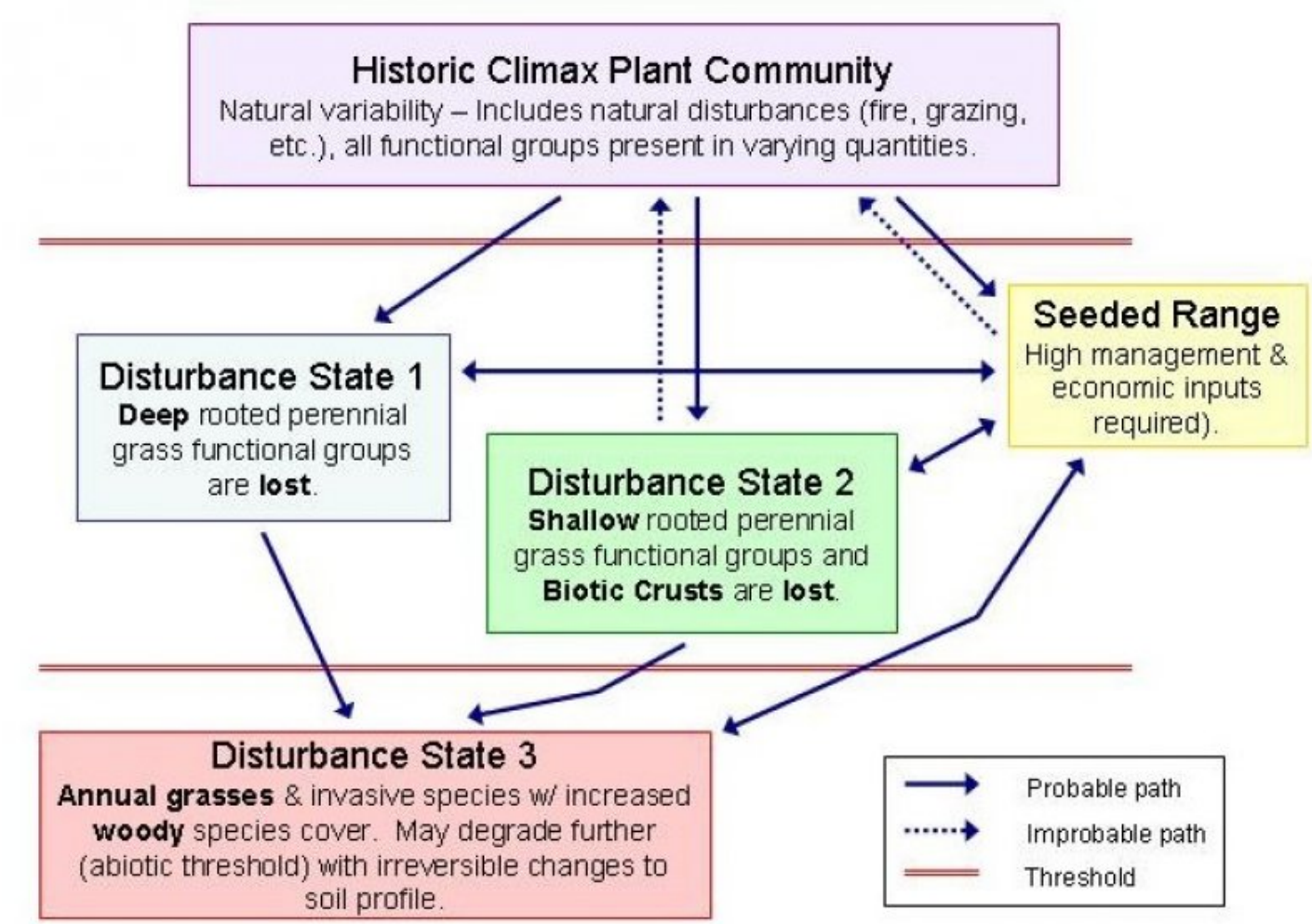
Permeability class	Rapid
Available water capacity (0-101.6cm)	5.08–20.32 cm

Ecological dynamics

The soils of this site are prone to erosion by winds. The loss of plant cover from frequent burning, heavy grazing, off-road vehicle use, or other disturbance, will result in severe wind erosion and the formation of blow-outs and active dunes. If heavy grazing use causes site deterioration, needle and thread and indian ricegrass will decrease and cheatgrass, russian thistle, and other undesirables will invade the site.

Variability in this site results from differences in soil texture. An increase in coarse material will usually result in an increase in the proportion of Indian ricegrass. Needleandthread will increase on soils with a finer sand surface. Antelope bitterbrush is prominent where gravelly substrata are present. Occasionally, silt layers can occur in the subsoil which holds moisture within reach of shallower rooted plants, thereby increasing their presence.

State and transition model



GENERAL MODEL FOR COOL-SEASON BUNCHGRASS RANGELANDS

State 1
Reference

Community 1.1
Needle and Thread, Indian Ricegrass, and Antelope Bitterbrush

Needle and thread - indian ricegrass - antelope bitterbrush community. The HCPC is the interpretative plant community for this site. Variability in this site results from differences in soil texture. An increase in coarse material will usually result in an increase in the proportion of indian ricegrass. Needle and thread will increase on soils with a finer sand surface. Antelope bitterbruswh is prominent where gravelly substrata are present. Occasionally, silt layers can occur in the subsoil which holds moisture within reach of shallower rooted plants, (forbs for example) thereby increasing their presence.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	303	448	577
Shrub/Vine	62	129	196
Forb	22	39	56
Total	**387**	**616**	**829**

Figure 3. Plant community growth curve (percent production by month). OR2261, B7 SANDS, GOOD CONDITION. RPC growth curve B7 SANDS, GOOD CONDITION.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	15	20	25	15	5	5	0	5	10	0	0

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	**Dominant deep rooted perennial grasses**			224–392	
	needle and thread	HECO26	*Hesperostipa comata*	224–392	–
2	**Sub-dominant deep rooted perennial grasses**			67–157	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	56–112	–
	tufted wheatgrass	ELMA7	*Elymus macrourus*	11–45	–
4	**Sub-dominant shallow rooted perennial grasses**			6–11	
	Sandberg bluegrass	POSE	*Poa secunda*	6–11	–
5	**Other perennial grasses**			6–17	
	squirreltail	ELEL5	*Elymus elymoides*	0–6	–
	prairie Junegrass	KOMA	*Koeleria macrantha*	0–6	–
	yellow wildrye	LEFL4	*Leymus flavescens*	0–6	–
Forb					
7	**Dominant perennial forbs**			11–28	
	snow buckwheat	ERNI2	*Eriogonum niveum*	11–28	–
9	**Other perennial forbs**			11–28	
	common yarrow	ACMI2	*Achillea millefolium*	0–11	–
	milkvetch	ASTRA	*Astragalus*	0–11	–
	Carey's balsamroot	BACA3	*Balsamorhiza careyana*	0–11	–
	naked mariposa lily	CANU2	*Calochortus nudus*	0–11	–
	Douglas' dustymaiden	CHDO	*Chaenactis douglasii*	0–11	–
	hairy false goldenaster	HEVI4	*Heterotheca villosa*	0–11	–
	desertparsley	LOMAT	*Lomatium*	0–11	–
	pale evening primrose	OEPA	*Oenothera pallida*	0–11	–
	pricklypear	OPUNT	*Opuntia*	0–11	–
	phacelia	PHACE	*Phacelia*	0–11	–
	woolly plantain	PLPA2	*Plantago patagonica*	0–11	–
	scurfpea	PSORA2	*Psoralidium*	0–11	–
Shrub/Vine					
11	**Dominant evergreen shrubs**			56–168	
	antelope bitterbrush	PUTR2	*Purshia tridentata*	56–168	–
15	**Other shrubs**			6–28	
	basin big sagebrush	ARTRT	*Artemisia tridentata ssp. tridentata*	0–6	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	0–6	–
	green rabbitbrush	ERTE18	*Ericameria teretifolia*	0–6	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–6	–

Animal community

Native Wildlife Associated With the Climax Community:
The site provides many of the habitat elements for pronghorn antelope and wintering mule deer. It also provides food and cover for various rodents, songbirds, and their associated predators.

Wildlife:

This site is commonly used by mule deer and pronghorn antelope. When this site is adjacent to irrigated cropland, ring-necked pheasant and gray partridge may be present.

Livestock Grazing:
This site is suited to winter grazing use by cattle and sheep in a grazing system that provides for deferment of grazing use during the growing season which is two of every three years.

Hydrological functions

The soils of this site have rapid infiltration rates and very low runoff potential. The hydrologic soil groups are A and C.

Recreational uses

This site is attractive to off-road vehicle users because of its hummocky relief and sandy surface. This use commonly results in the loss of protective vegetation and sever wind erosion.

Other information

Caution must be exercised in seeding because the soils are droughty and subject to severe wind erosion.

Contributors

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Approval

Kirt Walstad, 2/06/2025

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
Contact for lead author	Oregon NRCS State Rangeland Management Specialist
Date	07/25/2012
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-20%

5. **Number of gullies and erosion associated with gullies:** Few

6. **Extent of wind scoured, blowouts and/or depositional areas:** Few to many; may be directional low dunes present; severe wind erosion hazard

7. **Amount of litter movement (describe size and distance expected to travel):** Fine - some movement expected (wind) over short distances

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Slightly resistant to erosion; aggregate stability = 2-3

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Moderately deep to very deep sands and loamy fine sands; low OM (1-2%)

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Moderate ground cover (30-40%) and low (0-3%) slopes should reduce rainfall impact and overland flow; increased flow possible on steeper slopes (up to 20%)

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** 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: Needle and thread > antelope bitterbrush > indian ricegrass > Thickspike wheatgrass > forbs > shallow rooted perennial grasses > other shrubs

    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):** In areas with adequate plant cover

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Favorable: 700, Normal: 500, Unfavorable: 400 lbs/acre/year at high RSI (HCPC)

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:** Rabbitbrush, sage brush and broom snakeweed may increase and reduce cover of herbaceous plants. Cheatgrass and annual forbs invade sites that have lost shallow rooted perennial grass functional groups

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