

## Ecological site R023XY200OR PONDED CLAY

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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

<b>R023XY212OR</b>	<p><b>LOAMY 10-12 PZ</b></p> <p>Loamy 10-12 PZ (shallow to moderately deep loamy upland site, different composition- ARTRW8/ACTH7-PSSPS association)</p>
<b>R023XY214OR</b>	<p><b>CLAYPAN 10-12 PZ</b></p> <p>Claypan 10-12 PZ (very shallow to a restrictive layer upland site, different composition- ARAR8/PSSPS-POSE association)</p>
<b>R023XY220OR</b>	<p><b>CLAYEY 10-12 PZ</b></p> <p>Clayey 10-12 PZ (shallow to moderately deep clayey upland site, different composition- ARTRW8/PSSPS association)</p>
<b>R023XY316OR</b>	<p><b>DROUGHTY LOAM 11-13 PZ</b></p> <p>Droughty Loam 11-13 PZ (shallow to moderately deep loamy upland site, different composition- ARTRT-V/FEID-ACTH7 association)</p>

### Similar sites

<b>R023XY100OR</b>	<p><b>LAKEBED</b></p> <p>Lakebed (frequent ponding to greater depth and longer duration - 2 feet 3 in 10 years, different composition- ELEOC/RUMEX/JUARL association, ARCA13 absent)</p>
<b>R024XY007OR</b>	<p><b>DRY PONDED CLAY 6-10 PZ</b></p> <p>Dry Pondered Clay 6-10 PZ (drier, flooding and ponding rare, lower production, different composition- ARTRT/LETR5 association)</p>
<b>R024XY125OR</b>	<p><b>SEMI PONDED LAKEBED</b></p> <p>Semi Pondered Lakebed (shorter annual ponding duration with infrequent long deep ponding, different composition- MURI-PONE3(POSE) association, ARCA13 absent)</p>

R024XY126OR	<p><b>FLOODED CLAY SWALE</b></p> <p>Flooded Clay Swale (swale and overflow channel position, variable annual flooding, not ponded, higher production)</p>
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia cana ssp. bolanderi</i>
Herbaceous	(1) <i>Poa nevadensis</i> (2) <i>Leymus triticoides</i>

### Physiographic features

This site typically occurs in small playas and depressional areas located on uplands and plateaus. They are subject to annual spring ponding events. The depth and duration of ponding is dependent on the extent of runoff, rain and snow events on frozen soil, the size of the watershed and cyclical weather patterns. Slopes typically range from 0 to 2%. Elevations vary from 4,500 to 6,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Depression (2) Plateau
Ponding duration	Brief (2 to 7 days) to very brief (4 to 48 hours)
Ponding frequency	Frequent to occasional
Elevation	1,370 – 1,830 m
Slope	0 %
Aspect	Aspect is not a significant factor

### Climatic features

The annual precipitation ranges from 10 to 12 inches, most of which occurs in the form of snow and rain during the months of December through April. A seasonal supply of ponded and subsurface moisture augments the precipitation. The soil temperature regime is frigid with a mean air temperature of 45 degrees F. Temperature extremes range from 100 to -20 degrees F. The frost-free period ranges from less than 60 to 90 days. The optimum growth period for plant growth is from mid April to early July.

Table 3 Representative climatic features

Frost-free period (average)	90 days
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Freeze-free period (average)	0 days
Precipitation total (average)	310 mm

## Influencing water features

### Soil features

The soils of this site are typically fine textured, deep and somewhat poorly to poorly drained. The surface layer is a typically a silty clay loam over a clay subsoil often with a pick-up of loams to very gravelly loams at greater depths. Substratums are old lake terrace lacustrine sediments or basalt and rhyolitic bedrock. Variable duration ponding in the depressions occurs in the spring. Permeability is slow to very slow. The available water holding capacity (AWC) is about 6 to 10 inches for the profile. A seasonal high water table is present in the spring. The water erosion potential is slight due to the depositional position of the site.

Table 4. Representative soil features

Parent material	(1) Lacustrine deposits – rhyolite
Surface texture	(1) Silty clay loam (2) Clay loam
Family particle size	(1) Clayey
Drainage class	Somewhat poorly drained to poorly drained
Permeability class	Slow to very slow
Soil depth	100 – 180 cm
Available water capacity (0-101.6cm)	15.24 – 25.4 cm

### Ecological dynamics

The potential native plant community is dominated by Nevada bluegrass and silver sagebrush (Bolander). Beardless (creeping) wildrye is prominent. Sedges, rushes, bottlebrush squirrretail, Sandberg and a variety of forbs are present. Vegetative composition of the community is approximately 85 percent grasses, 5 percent forbs and 10 percent shrubs. The approximate ground cover is 60 to 80 percent (basal and crown).

#### Range in Characteristics:

Variability in plant composition and production on this site results from differences in the duration of annual ponding events and related sub-surface water availability. Production increases with increasing available surface and subsurface moisture. Nevada bluegrass increases at the upper end of the precipitation zone where ponding duration is longer. Beardless wildrye increases in drier areas. Concentric vegetation patterns develop in depressional playas based on the extent and duration of ponding. With longer duration ponding sedges and rushes increase in the center and silver sagebrush decreases. Nevada bluegrass typically occurs throughout the playa except where extended deep ponding occurs. Mat muhly and Douglas' sedge increase in drier areas. Sandberg bluegrass and associated upland vegetation occur on the outer dry playa edges.

#### Response to Disturbance - States:

Deterioration of the site can result from both hydrologic alterations and overgrazing. Limited hydrologic alterations occur on playa sites with the construction of dugouts to concentrate water for extended seasonal livestock water. The concentration of water reduces the extent and depth of water on the remaining site with variable loss of wetland plants. The changes are most apparent at the lower end of the precipitation zone where limited runoff is available for ponding.

When the condition of the site deteriorates as a result of over grazing, Nevada bluegrass decreases. Silver sage, creeping wild rye and a variety of forbs increase. Under deteriorated conditions bare ground rapidly increases. Production decreases and silver sage strongly dominates the site. Upland vegetation including big sagebrush, beardless wildrye and Sandberg bluegrass increases on the drier site edges. Soil surface structural changes are apparent. There is a reduction in organic matter, an increase in dry season surface flatness and a decrease in intake rates.

States: ARCA3/bare ground; playa; altered land use changes

## State and transition model

## Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Dominant, perennial, moderate-rooted bunchgrass</b>			448-673	
2	<b>Sub-dominant, moderate rooted, rhizomatous grass</b>			22-56	
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	22-56	–
3	<b>Perennial, moderate rooted, grass/grass-like</b>			112-224	
	sedge	CAREX	<i>Carex</i>	56-112	–
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	56-112	–
4	<b>Other perennial grass/grass-like</b>			78-191	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	22-78	–
	meadow barley	HOB2	<i>Hordeum brachyantherum</i>	0-56	–
	rush	JUNCU	<i>Juncus</i>	11-56	–
	basin wildrye	LECI4	<i>Leymus cinereus</i>	0-56	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	6-34	–
	Douglas' sedge	CADO2	<i>Carex douglasii</i>	6-34	–
<b>Forb</b>					
5	<b>Perennial forbs</b>			22-90	
	povertyweed	IVAX	<i>Iva axillaris</i>	6-22	–
	desertparsley	LOMAT	<i>Lomatium</i>	6-22	–
	lupine	LUPIN	<i>Lupinus</i>	6-22	–
	evening primrose	OENOT	<i>Oenothera</i>	3-11	–
	figwort	SCROP	<i>Scrophularia</i>	0-11	–
<b>Shrub/Vine</b>					
6	<b>Dominant, deciduous, sprouting shrub</b>			168-224	
	silver sagebrush	ARCA3	<i>Artemisia cana ssp. bolanderi</i>	168-224	–
7	<b>Other shrub</b>			0-34	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata ssp. wyomingensis</i>	0-34	–

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 2.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 11. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Dominant, perennial, moderate-rooted bunchgrass</b>			11-28	
2	<b>Sub-dominant, moderate rooted, rhizomatous grass</b>			11-28	
	beardless wildrye	LETR5	<i>Leymus triticoides</i>	11-28	–
3	<b>Perennial, moderate rooted, grass/grass-like</b>			67-140	
	sedge	CAREX	<i>Carex</i>	28-56	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	28-56	–
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	11-28	–
4	<b>Other perennial grass/grass-like</b>			6-28	
	rush	JUNCU	<i>Juncus</i>	6-11	–
<b>Forb</b>					
5	<b>Perennial forbs</b>			34-56	
	evening primrose	OENOT	<i>Oenothera</i>	6-28	–
	povertyweed	IVAX	<i>Iva axillaris</i>	0-6	–
	desertparsley	LOMAT	<i>Lomatium</i>	0-6	–
	lupine	LUPIN	<i>Lupinus</i>	0-6	–
<b>Shrub/Vine</b>					
6	<b>Dominant, deciduous, sprouting shrub</b>			280-392	
	silver sagebrush	ARCAB3	<i>Artemisia cana ssp. bolanderi</i>	280-392	–

Table 12. Community 3.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 13. Community 3.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 14. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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## Animal community

Livestock Grazing: This site can easily be damaged if grazed when the soils are wet. It is well suited for livestock grazing use in the summer 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 Nevada bluegrass. Nevada bluegrass can be severely damaged if heavily grazed during periods of grass seed formation before root reserves have accumulated and soil moisture is low. Deferred grazing or rest is recommended at least once every three years. Wildlife This site is used by pronghorn antelope, mule deer, rabbits, rodents, sage grouse and other upland birds, waterfowl and various predators. It provides excellent spring forage, rearing food and water for a

large variety of wildlife.

## Hydrological functions

The soils of this site are typically in a depressional topographic position, accumulate off-site surface flows and have no runoff potential. When vegetation cover is high they have improved soil surface characteristics and optimized inherently low infiltration rates. Hydrologic cover is high when the composition of Nevada and other perennial dominant understory grasses, is greater than 70 percent of potential. The soils are in hydrologic group D.

## Other information

This site presently has limited potential for native reseeding due to the present unavailability of Nevada bluegrass seed.

## Contributors

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Bob Gillaspay  
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NRCS/BLM Team  
NRCS/BLM Team - Redmond (Up-date)  
SCS/BLM Teams - Hines (1988 & 1994)

## 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	08/09/2012
Approved by	
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

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

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4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): 10-30%

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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, moderate wind erosion hazard

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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): Moderate to significant resistance to erosion: aggregate stability = 3-6

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9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Deep poorly to very poorly drained neutral to mildly alkaline silt loam to clays: Low OM (0-2%)

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10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Low ground cover (20-40%) and gentle slopes (0-2%) 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: Nevada bluegrass > Creeping wildrye > other grasses & grass-likes > Silver sagebrush > forbs

Sub-dominant:

Other:

Additional:

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13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

Normal decadence and mortality expected

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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):

Favorable: 1800, Normal: 1500, Unfavorable: 1000 lbs/acre/year at high RSI (HCPC)

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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: Perennial brush species will increase with deterioration of plant community. Cheatgrass, Medusahead, and povertyweed 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

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