

Ecological site R034AY285CO Foothill Swale

Last updated: 9/07/2023
Accessed: 04/25/2024

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.

MLRA notes

Major Land Resource Area (MLRA): 034A–Cool Central Desertic Basins and Plateaus

Major Land Resource Area (MLRA): 34A-Cool Central Desertic Basins and Plateaus

For further information regarding MLRAs, refer to:

<http://soils.usda.gov/survey/geography/mlra/index.html>

LRU notes

Land Resource Unit (LRU) 34A-10:

- Moisture Regime: aridic ustic
- Temperature Regime: frigid
- Dominant Cover: rangeland
- Representative Value (RV) Effective Precipitation: 12-16 inches
- RV Frost-Free Days: 75-95 days

Classification relationships

Relationship to Other Established Classification Systems

Ecoregions (EPA):

Level I: 10 North American Deserts

Level II: 10.1 Cold Deserts

Level III: 10.1.4 Wyoming Basin

Ecological site concept

- This receives additional water.
- These soils:
 - o are not saline or saline-sodic
 - o are deep, or very deep
 - o are not skeletal within 20" of the soil surface; and have minimal rock fragments at the soil surface
 - o are not strongly or violently effervescent in the surface mineral layer (within top 10")
 - o have surface textures that usually range from fine sandy loam to loam in surface mineral layer (4")
- have slopes less than 30 percent
- does not have a clay content that is greater than 35% in mineral soil surface layer (1-2")

Associated sites

R034AY298CO	Rolling Loam
-------------	---------------------

Similar sites

R034AY433CO	Silty Swale
-------------	--------------------

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia tridentata</i> (2) <i>Atriplex canescens</i>
Herbaceous	(1) <i>Leymus cinereus</i> (2) <i>Pascopyrum smithii</i>

Physiographic features

This site occurs in the swales, valleys, alluvial bottomlands, and other low-lying areas which receive runoff from adjacent uplands.

Elevation ranges from 6000 feet to 7600 feet above sea level

Table 2. Representative physiographic features

Landforms	(1) Valley floor (2) Drainageway (3) Stream terrace
Flooding frequency	Rare
Ponding frequency	None
Elevation	6,000–7,600 ft
Slope	0–4%
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges between 12 to 16 inches, with about 60 percent coming as snow.

The optimum growing season for native plants is April 15 to July 15.

Due to its position, this site receives occasional beneficial moisture from run-in water and overflow water.

Table 3. Representative climatic features

Frost-free period (actual range)	75-95 days
Freeze-free period (actual range)	
Precipitation total (actual range)	12-16 in
Frost-free period (average)	85 days
Freeze-free period (average)	
Precipitation total (average)	16 in

Influencing water features

This is a run-in site that receives additional moisture from adjacent uplands.

Wetland description

No wetland classification, may be associated with wetlands.

Soil features

Deep, well drained, medium and moderately coarse textured soils. Brown and grayish brown surface soils 5 to 9 inches thick underlain by stratified loamy materials. These soils have a good intake rates, good permeability, and a high waterholding capacity. Fertility levels are usually high. Soils are usually in the frigid family.

Soils in this site included: Havre loam and Glendive fine sandy loam.

Table 4. Representative soil features

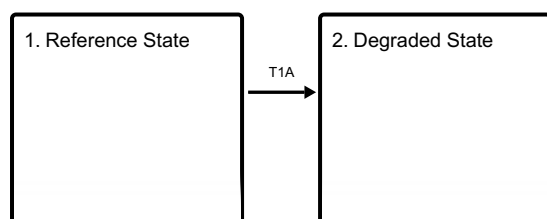
Parent material	(1) Alluvium–sedimentary rock
Surface texture	(1) Fine sandy loam (2) Loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Very slow to moderately rapid
Soil depth	20–60 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0–5%
Available water capacity (0-40in)	3–8.2 in
Calcium carbonate equivalent (0-40in)	5–10%
Electrical conductivity (Depth not specified)	0–4 mmhos/cm
Subsurface fragment volume <=3" (Depth not specified)	0–5%

Ecological dynamics

The aspect of this site is a valley grassland plant community with a rather sparse stand of shrubs, basin wildrye, western and streambank wheatgrass, Indian ricegrass, squirreltail, and Nevada bluegrass are the dominant grasses. Shrubs include big sagebrush, rubber rabbitbrush, and fourwing saltbush. Principal forbs are yarrow, fleabane, globemallow, Indian paintbrush, and wild buckwheat. Invaders of this site are cheatgrass, Kentucky bluegrass, and black greasewood.

State and transition model

Ecosystem states



State 1 submodel, plant communities

1.1. Basin Wildrye/Rhizomatous wheatgrasses

State 1 Reference State

Community 1.1 Basin Wildrye/Rhizomatous wheatgrasses

This site supports a plant community of approximately 75 to 85 percent grass/grass-like, 5 to 10 percent forbs, and 10 to 15 percent shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	700	1600	2500
Shrub/Vine	200	250	300
Forb	100	150	200
Total	1000	2000	3000

State 2 Degraded State

This State is result of soil-disturbing activities such as hoof-action, anthropogenic activity, and rodent activity. It can also occur after brush management followed by improper grazing techniques that usually include high-intensity grazing without appropriate recovery periods.

Transition T1A State 1 to 2

The driver for transition T1A from State 1 (Reference State) to State 2 (Degraded) is low to high intensity, long duration, and high frequency herbivory events.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				1500–1700	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	600–1000	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	100–200	–
	thickspike wheatgrass	ELLA3	<i>Elymus lanceolatus</i>	100–200	–
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	20–100	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	20–100	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	20–100	–
	slender wheatgrass	ELTRT	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	20–60	–
	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	20–60	–
	bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	20–40	–
	beardless wheatgrass	PSSPI	<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	20–40	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	20–40	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	10–20	–
Forb					
2				100–200	
	yarrow	ACHIL	<i>Achillea</i>	20–40	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	20–40	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	20–40	–
	streamside fleabane	ERGLP	<i>Erigeron glabellus</i> var. <i>pubescens</i>	20–40	–
	buckwheat	ERIOG	<i>Eriogonum</i>	20–40	–
	bladderpod	LESQU	<i>Lesquerella</i>	20–40	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	20–40	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	10–20	–
Shrub/Vine					
3				200–300	
	Wyoming big sagebrush	ARTRW8	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	100–200	–
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	40–100	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	40–100	–

Animal community

WILDLIFE INTERPRETATIONS:

This site offers a high value rating for deer, cottontail, and upland game birds. It offers a medium value rating for antelope, bison, elk, and waterfowl.

GRAZING INTERPRETATIONS:

This site offers a high value rating for sheep. It offers a medium value rating for cattle and horses.

Hydrological functions

This site offers a medium value rating for watershed.

Recreational uses

Medium value.

Wood products

None.

Inventory data references

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Type locality

Location 1: Rio Blanco County, CO	
General legal description	Major drainages in the Piceance Basin, Rio Blanco County.

Other references

Belnap, J. and S. L. Phillips. 2001. Soil biota in an ungrazed grassland: Response to annual grass (*Bromus tectorum*) invasion. *Ecological Applications*: 11: 1261-1275.

Caudle, D., H. Sanchez, J. DiBenedetto, C. Talbot, and M. Karl. 2013. Draft Interagency Ecological Site Handbook for Rangelands. US Dept. of Agriculture. Washington D.C

Cleland, D.T.; Freeouf, J.A.; Keys, J.E., Jr.; Nowacki, G.J.; Carpenter, C; McNab, W.H. 2007. Ecological Subregions: Sections and Subsections of the Conterminous United States.[1:3,500,000], Sloan, A.M., cartog. Gen. Tech. Report WO-76. Washington, DC: U.S. Department of Agriculture, Forest Service.

Musgrave, G.W. 1955. How much of the rain enters the soil? In *Water*: U.S. Department of Agriculture Yearbook. Washington, D.C. P. 151-159.

National Engineering Handbook. US Department of Agriculture, Natural Resources Conservation Service. Available: <http://www.info.usda.gov/CED/Default.cfm#National%20Engineering%20Handbook>. Accessed February 25, 2008.

Passey, H. B., W. K. Hugie, E. W. Williams, and D. E. Ball. 1982. Relationships between soil, plant community, and climate on rangelands of the Intermountain west. USDA, Soil Conservation Service, Tech. Bull. No. 1669.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed [8/10/2015].

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.

Western Regional Climate Center. Retrieved from <http://www.wrcc.dri.edu/summary/Climsmco.html> on May 17, 2018.

Contributors

Brandon Sanders

Approval

Kirt Walstad, 9/07/2023

Acknowledgments

Field offices in Colorado where the site occurs: Craig, Glenwood Springs, Grand Junction, and Meeker.

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)	
Contact for lead author	
Date	04/25/2024
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

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

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

6. **Extent of wind scoured, blowouts and/or depositional areas:**

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

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**
-
9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**
-
10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**
-
11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**
-
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:
- Sub-dominant:
- Other:
- Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
-
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):**
-
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:**
-
17. **Perennial plant reproductive capability:**
-