

Ecological site R034AA013UT

Semi-Wet Fresh Meadow

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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.

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, consists of approximately 21 million acres in Wyoming, Colorado and Utah, it consists of 11 Land Resource Units (LRU). These units are divisions of the MLRA based on geology, landscape, common soils, water resources and plant community potentials. The elevation spans from approximately 5600 feet (1700 m) along the Green River in UT and CO to approximately 9500 feet (2900 m) near Jeffrey City, WY. Annual precipitation ranges from 7 to 16 inches (177 to 406 mm), with the driest areas in the Green River and Great Divide Basins and the wettest areas in northern Carbon County, southeast Fremont County and Albany County. There is a seasonal weather pattern that trends west to east, with more winter precipitation in the west and more spring and summer in the east, illustrated by diminishing amounts of big sagebrush in the eastern part of the MLRA.

LRU notes

The Bear River Valley LRU is located on the far western side of MLRA 34A between the Bear River Divide and the Monte Cristo Range, from Woodruff, Utah at the southern end to Cokeville, Wyoming at the northern end. The total area of the LRU is approximately 340,000 acres. It shares a boundary with MLRA 47, 43B and 46 (proposed). This LRU differs from the others in its geology, which is comprised mostly of alluvium and colluvium from the Stump Formation. Its weather patterns are such that the soil moisture is xeric, there is a slight peak in winter precipitation in this LRU, with typical yearly precipitation between 9 to 15 inches (230 to 380 mm). The soil temperature regime of this LRU is frigid with mean annual soil temperatures ranging from 44 to 48 degrees Fahrenheit (6.7 to 8.8°C). The elevation range is from 5700 to 7000 feet (1730 to 2130 m). The soils in the Bear River Valley are dominated by young aged very deep soils developed from sandstone and shale parent material re-worked with recent alluvium. Soils are dominated by Alfisols with young argillic horizons and by Fluvents in more recent alluvium. The Bear River runs through this LRU, allowing for ample amounts of irrigation water used in the lowland areas to produce hay. Smaller tributaries originating from the neighboring mountains.

Ecological site concept

The Semi-wet Fresh Meadow ecological site is primarily fed by groundwater from springs. The ecological site has very narrow valley bottoms and a small contributing watershed area. The upland areas adjacent to this site are typically big sagebrush (*Artemisia tridentata*). The streams in this ecological site serve only to convey water away from the spring area. The stream is perennial when near the source (springs), and may become intermittent as move further downstream of the spring. Streams that are perennial where significant springs supply the system, may gradually become intermittent when spring influence ceases. This ecological site in a typical precipitation year does not experience high flows in the spring in association with snowmelt because of the small watershed. The valley and, more specifically, the wet area (green-line) is typically very narrow and confined. Slope is generally between one and two percent. There is one plant community component in the reference condition. The valley is typically narrow and confined.

Associated sites

R034AA011UT	Riparian Complex Perennial Gravelly VIII/E4 (Northwest Territory Sedge)
R034AA239UT	Semi-desert Silt (Basin big sagebrush/ Bluebunch wheatgrass)

Similar sites

R034AA011UT	Riparian Complex Perennial Gravelly VIII/E4 (Northwest Territory Sedge)
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Carex nebrascensis</i> (2) <i>Juncus arcticus ssp. littoralis</i>

Physiographic features

This site is in the Bear River Basin in the Middle Rocky Mountain Province of the Rocky Mountain System. It typically occurs between 6500 and 6700 feet with valley slopes less than 5 percent. The water table can be found at the surface to over 60 inches below the surface depending on the distance from the stream channel and fluvial surface.

Table 2. Representative physiographic features

Landforms	(1) Drainageway
Flooding duration	Brief (2 to 7 days) to long (7 to 30 days)
Flooding frequency	Frequent to occasional
Ponding frequency	None
Elevation	1,950 – 2,040 m
Slope	0 – 10 %
Water table depth	50 – 100 cm
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation is 10 to 15 inches. Peak precipitation occurs as snow from October through April. This site has cold winters and short summers. Occasional convective thunderstorms produce small amounts of rain from June through September. The average annual temperature is 25 to 55 degrees Fahrenheit. The freeze-free period ranges from 95 to 115 days.

Table 3 Representative climatic features

Frost-free period (average)	80 days
Freeze-free period (average)	120 days
Precipitation total (average)	360 mm

Influencing water features

Slope wetlands are typically found where there is a discharge of groundwater to the surface. Main water sources are groundwater return flow and interflow from surrounding uplands, and precipitation. Water dynamics are dominated by down-slope unidirectional water flow. Slope wetlands lose water primarily by saturation subsurface and surface flows and by evaporation. These wetlands may develop channels, but the channels only convey water away from the wetland. This site may degrade and have a more defined channel.

Soil features

This site occurs in narrow drainageways. The soils on this site are loamy to clay loam and are influenced by a high water table. Soils on this site are poorly to moderately drained depending on distance from water source and distance from bottom of drainageway. The water table fluctuates between 20 and 40 inches. Soil temperature and moisture regime is frigid and xeric, trending ustic.

Table 4. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Loam (2) Clay loam
Drainage class	Poorly drained to moderately well drained
Surface fragment cover ≤ 3 "	Not specified
Surface fragment cover > 3 "	Not specified
Subsurface fragment volume ≤ 3 " (Depth not specified)	Not specified
Subsurface fragment volume > 3 " (Depth not specified)	Not specified

Ecological dynamics

This site is characterized by narrow drainageways that support species tolerant of high water tables. The water source in this site is predominantly ground water. This site may have a small channel in the bottom of the narrow valley, but this channel only serves to move water away from the site and is not typically influenced by fluvial processes. This site is typically found in low order watershed reaches and is typically upstream sites from lotic riparian sites. The plant community components in this site are influenced by depth to groundwater and soils. There is only one plant community components within this site but the species change proportion as depth to

ground water increases as the site transitions out to the uplands. Obligate wetland plants are found in the bottom of the drainageway with the highest water table, such as Nebraska sedge or other obligate wetland sedges. Baltic rush is found throughout the site, but typically in higher proportion moving away from the wettest part. Willows and other mesic shrubs may occur on this site in area with unique aeration, but they are not typical of this site.

The hydrology of the site can change with spring development or grazing. A small narrow channel may be present in this site. Under continuous season long grazing over many years, this small channel can widen as the sedges and rushes are eaten or trampled. Some downcutting may occur and the water table deepens and the site becomes narrower than in the reference state. The lowering of the water table also effect the plant species, increasing species more tolerant of dry conditions. Non-native species can be present in this site, particularly Kentucky bluegrass. A second plant community will develop when the water table has dropped on the previously wetter surface.

State and transition model

Figure 3. STM for R034AA013UT

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Rhizomatous graminoids			560-2242	
	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	560-2242	25-80
	Grass-like, perennial	2GLP	<i>Grass-like, perennial</i>	6-112	1-10
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-56	0-5
	spikerush	ELEOC	<i>Eleocharis</i>	0-56	0-5
	scratchgrass	MUAS	<i>Muhlenbergia asperifolia</i>	0-6	0-5
2	Non-rhizomatous perennial graminoids			0-168	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-112	0-10
	Grass-like (not a true grass)	2GL	<i>Grass-like (not a true grass)</i>	0-56	0-5
3	Annual graminoids			0-112	
	Grass, annual	2GA	<i>Grass, annual</i>	0-56	0-5
	Grass-like, annual	2GLA	<i>Grass-like, annual</i>	0-56	0-5
Forb					
4	Perennial forb			0-112	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-56	0-10
	goldenrod	SOLID	<i>Solidago</i>	0-56	0-5
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-6	0-2
5	Annual forb			0-56	
	Forb, annual	2FA	<i>Forb, annual</i>	0-56	0-10

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Rhizomatous graminoids			560-2242	
	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	560-2018	25-75
	creeping bentgrass	AGST2	<i>Agrostis stolonifera</i>	1-168	1-15
	Grass-like, perennial	2GLP	<i>Grass-like, perennial</i>	6-112	1-10
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	6-67	1-10
	spikerush	ELEOC	<i>Eleocharis</i>	0-56	0-5
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-56	0-5

	scratchgrass	MUAS	<i>Muhlenbergia asperifolia</i>	0-6	0-5
2	Non-rhizomatous graminoids			0-168	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-112	0-10
	Grass-like (not a true grass)	2GL	<i>Grass-like (not a true grass)</i>	0-56	0-5
	meadow foxtail	ALPR3	<i>Alopecurus pratensis</i>	0-28	0-5
3	Annual graminoids			0-112	
	Grass, annual	2GA	<i>Grass, annual</i>	0-56	0-5
	Grass-like, annual	2GLA	<i>Grass-like, annual</i>	0-56	0-5
Forb					
4	Perennial forb			0-112	
	bull thistle	CIVU	<i>Cirsium vulgare</i>	0-112	0-5
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-56	0-10
	goldenrod	SOLID	<i>Solidago</i>	0-56	0-5
	common dandelion	TAOF	<i>Taraxacum officinale</i>	0-11	0-5
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-6	0-2
5	Annual forb			0-56	
	Forb, annual	2FA	<i>Forb, annual</i>	0-56	0-10

Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Hydrological functions

This site is found high in the watershed in 34A, where there is little influence from heavy snow pack and subsequent spring runoff. This site also has spring influence providing ground water at the site through the growing season.

Inventory data references

Data gathered by qualified range professionals within NRCS and cooperating partners.

Other references

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Contributors

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Approval

Kirt Walstad, 2/19/2025

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)	
Contact for lead author	
Date	02/18/2025
Approved by	
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:
