

Ecological site R034AY174WY

Subirrigated

Green River and Great Divide Basins (Sb)

Last updated: 2/26/2025
Accessed: 08/20/2026

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

R034AY128WY	Lowland Green River and Great Divide Basins (LL) Lowland
R034AY138WY	Saline Lowland Green River and Great Divide Basins (SL) Saline Lowland
R034AY142WY	Saline Subirrigated Green River and Great Divide Basins (SS) Saline Subirrigated
R034AY178WY	Wetland Green River and Great Divide Basins (WL) Wetland

Similar sites

R034AY274WY	Subirrigated Foothills and Basins West (Sb) Subirrigated (Sb) 10-14W has higher production.
R034AY178WY	Wetland Green River and Great Divide Basins (WL) Wetland (WL) 7-9GR has a higher water table.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site will usually occur on level to nearly level land along perennial or intermittent streams and near seeps, springs, and sloughs. It is found on all exposures and on slopes about 3%.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Stream terrace
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to occasional
Ponding frequency	None
Elevation	1,830 – 2,200 m
Slope	0 – 10 %
Ponding depth	0 cm
Water table depth	30 – 100 cm
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 7-9 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 mph.

Growth of native cool season plants begins about April 15 and continues to about July 15. Some green up of cool season plants may occur in September if moisture is available.

For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/cgibin/state.pl?state=wy> website. Other climate stations representative of this precipitation zone include "Bitter Creek", "Farson ", "Rock Springs FAA AP", and "Wamsutter" in Sweetwater County; "Church Buttes Gas PLT", and Mountain View" in Uinta County; "Fontenelle", "La Barge", and "Sage 4 NNW" in Lincoln County; and "Big Piney" in Sublette County.

Table 3 Representative climatic features

Frost-free period (average)	120 days
-----------------------------	----------

Freeze-free period (average)	130 days
Precipitation total (average)	230 mm

Influencing water features

Stream type: C (Rosgen)

Soil features

The soils of this site are moderately deep to very deep (greater than 15"to bedrock) and formed from alluvium from mixed sources. They have water tables below the surface for all of the growing season. The water table is non-saline and non-alkaline. They are loamy soils with a seasonal high water table depth of about 1 to 3 feet most years. These areas may have water over the surface from run-in but only for short periods of time. Soil surface usually has a high content of organic matter with mottling or gleying usually occurring within 20 to 40 inches of the surface. Soil surface textures are loam, clay loam, silt loam, fine sandy loam and sandy loam. Soil surface texture modifiers may or may not include gravelly or cobbly.

Major Soil Series correlated to this site include: Becks, Canninger, Lander, and Pescar.

Table 4. Representative soil features

Surface texture	(1) Loam (2) Clay loam (3) Silt loam
Drainage class	Somewhat poorly drained to moderately well drained
Permeability class	Moderately slow to moderate
Soil depth	40 – 150 cm
Surface fragment cover <=3"	0 – 20 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	6.35 – 13.97 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 40 %

Electrical conductivity (0-101.6cm)	0 – 10 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 8.6
Subsurface fragment volume <=3" (Depth not specified)	0 – 30 %
Subsurface fragment volume >3" (Depth not specified)	0 – 20 %

Ecological dynamics

As this site deteriorates, species such as inland sedge and Baltic rush increase. Grasses such as tufted hairgrass, slender wheatgrass, Nebraska sedge, and basin wildrye will decrease in frequency and production. Willow stands will become decadent with a lack of diverse age classes as site declines. This site is vulnerable to noxious weed invasion by such species as perennial pepperweed.

These plant communities narratives may not represent every possibility, but they probably are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data is collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC’s) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

The Reference Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

The following is a State and Transition Model Diagram that illustrates the common plant communities (states) that can occur on the site and the transitions between these communities. The ecological processes will be discussed in more detail in the plant community narratives following the diagram.

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 (%)
Grass/Grasslike					
1				1177-1681	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	1177-1681	–
2				336-673	
	tufted hairgrass	DECE	<i>Deschampsia cespitosa</i>	336-673	–
3				336-673	

	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	336-673	–
4				168-336	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	168-336	–
5				336-673	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-168	–
	bluejoint	CACA4	<i>Calamagrostis canadensis</i>	0-168	–
	inland sedge	CAIN11	<i>Carex interior</i>	0-168	–
	northern reedgrass	CASTI3	<i>Calamagrostis stricta ssp. inexpansa</i>	0-168	–
	slender wheatgrass	ELTR7	<i>Elymus trachycaulus</i>	0-168	–
	fowl mannagrass	GLST	<i>Glyceria striata</i>	0-168	–
	mountain rush	JUARL	<i>Juncus arcticus ssp. littoralis</i>	0-168	–
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	0-168	–
	Nuttall's alkaligrass	PUNU2	<i>Puccinellia nuttalliana</i>	0-168	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0-168	–
Forb					
6				168-673	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-168	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-168	–
	milkvetch	ASTRA	<i>Astragalus</i>	0-168	–
	scouringrush horsetail	EQHY	<i>Equisetum hyemale</i>	0-168	–
	fleabane	ERIGE2	<i>Erigeron</i>	0-168	–
	aster	EUCEP2	<i>Eucephalus</i>	0-168	–
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	0-168	–
	iris	IRIS	<i>Iris</i>	0-168	–
	mint	MENTH	<i>Mentha</i>	0-168	–
	cinquefoil	POTEN	<i>Potentilla</i>	0-168	–
	buttercup	RANUN	<i>Ranunculus</i>	0-168	–
	goldenbanner	THERM	<i>Thermopsis</i>	0-168	–
	clover	TRIFO	<i>Trifolium</i>	0-168	–
	arrowgrass	TRIGL	<i>Triglochin</i>	0-168	–
	violet	VIOLA	<i>Viola</i>	0-168	–
Shrub/Vine					
7				168-504	
	willow	SALIX	<i>Salix</i>	168-504	–
8				34-168	
	shrubby cinquefoil	DAFRF	<i>Dasiphora fruticosa ssp. floribunda</i>	0-168	–
	rubber rabbitbrush	ERNA10	<i>Ericameria nauseosa</i>	0-168	–
	Woods' rose	ROWOW	<i>Rosa woodsii var. woodsii</i>	0-168	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0-168	–

Table 6. Community 2.1 plant community composition

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

Table 7. Community 3.1 plant community composition

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

Table 8. Community 4.1 plant community composition

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

Table 9. Community 5.1 plant community composition

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

Animal community

Animal Community – Wildlife Interpretations Tufted Hairgrass/Willow Plant Community (HCPC): This plant community is very important for most wildlife in the area. Over 80% of all wildlife use this site to fulfill some part of their habitat needs. It provides forage and thermal and hiding cover for mule deer and moose. It provides nesting habitat for shorebirds, songbirds, and waterfowl as well as ground nesting birds such as harriers. The lush herbaceous material produces insects for sage grouse brood rearing and foraging. Dense ground cover provides escape cover, forage, and breeding areas for small mammals which draw predators such as raptors, red fox and coyote. Other birds that would frequent this plant community include red-wing blackbirds, sandhill cranes, western meadowlarks, neotropical migrants, and golden eagles. Redtop/Kentucky Bluegrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Kentucky Bluegrass/Forb Plant Community: This plant community may be beneficial for some of the same wildlife that would use the Historic Climax Plant Community. However, the woody component is typically less productive and unable to support large browsers such as moose. As woody plants decrease, structural diversity is lost for neotropical migrants, cover decreased for deer, and nesting for shrub-nesting birds is impacted. It may provide some brood rearing and foraging opportunities for sage grouse when it occurs proximal to woody cover. Noxious Weed Plant Community: This plant community is less diverse, and thus, less able to meet the habitat needs of many wildlife. Herbaceous forage and cover is not as dense and will aid in successful predation of nesting birds, therefore improving habitat for predators such as raptors, red fox, and coyote. It may provide some brood rearing and foraging opportunities for sage grouse when it occurs proximal to woody cover. Managed Noxious Weed Plant Community: This plant community may be beneficial for the same wildlife that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover due to enhanced insect populations. Animal Community – Grazing Interpretations The following table lists suggested stocking rates for cattle under continuous season-long grazing under normal growing conditions. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using this information along with animal preference data, particularly when grazers other than cattle are involved. Under more intensive grazing management, improved harvest efficiencies can result in an increased carrying capacity. Plant Community Production (lb./ac) and Carrying Capacity* (AUM/ac) Tufted Hairgrass/Willow (HCPC) 2300-3500 lb./ac and .9 AUM/ac Redtop/Kentucky Bluegrass 1800-3000 lb./ac and .8 AUM/ac Kentucky Bluegrass/Forb 800-2000 lb./ac and .5 AUM/ac Noxious Weed 500-1300 lb./ac and .25 AUM/ac Managed Noxious Weed 1800-3000 lb./ac and .8 AUM/ac * - Continuous, season-long grazing by cattle under average growing conditions. Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage for cattle, sheep, or horses. During the dormant period, the forage for livestock use needs to be supplemented with protein because the quality does not meet minimum livestock requirements.

Hydrological functions

Climate is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group C. Infiltration rate is slow when soils are thoroughly wet. These soils have a slow rate of water transmission due to moderately fine to fine textures and/or high water table conditions. However, high forage production on this site diminishes runoff potential as long as site is managed for maintaining adequate residual vegetation. (Refer to Part 630, NRCS National Engineering Handbook for detailed hydraulic information). Rills and gullies should not typically be present. Water flow patterns may be present if associated with a perennial flowing stream. Litter typically falls in place, and signs of movement are not common unless associated with a perennial flowing stream. Chemical and physical crusts are rare to non-existent.

Recreational uses

This site provides a variety of hunting opportunities as well as providing popular camping areas for recreationists. This site has a wide variety of forbs which bloom throughout spring and summer, providing esthetic values that appeal to visitors.

Wood products

No appreciable wood products are present on the site.

Other products

None noted.

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. Those involved in developing this site include: Bill Christensen, Range Management Specialist, NRCS; Karen Clause, Range Management Specialist, NRCS; and Everet Bainter, Range Management Specialist, NRCS. 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.

Contributors

Karen Clause

Approval

Kirt Walstad, 2/26/2025

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)	K. Clause, E. Bainter
Contact for lead author	karen.clause@wy.usda.gov or 307-367-2257
Date	03/16/2007
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. Number and extent of rills: Rare to nonexistent.

2. Presence of water flow patterns: Water flow patterns sometimes evident in floodplain zone where this site occurs.

3. Number and height of erosional pedestals or terracettes: Rare to nonexistent.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): Bare ground is typically less than 5%.

5. Number of gullies and erosion associated with gullies: Active gullies should not be present.

6. Extent of wind scoured, blowouts and/or depositional areas: Minimal to nonexistent.

7. Amount of litter movement (describe size and distance expected to travel): Herbaceous litter not expected to move.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): Soil Stability Index ratings typically 6.0.

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Soil surface highly variable with OM of 1-3%.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Plant community consists of 60-75% grasses, 20% forbs, and 5-20% shrubs. Dense plant canopy (70-100%) and litter plus moderate to moderately rapid infiltration rates result in minimal to nonexistent runoff until soils are saturated. Basal cover is typically greater than 5% for this site and effectively reduces runoff on this site.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): No compaction layer exists.

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: tall, cool season bunchgrasses>rhizomatous grass-likes>mid-size, cool season bunchgrasses> perennial shrubs>perennial forbs>cool season rhizomatous grasses

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Minimal decadence, typically associated with shrub component.

14. **Average percent litter cover (%) and depth (in):** Litter ranges from 1-25% of total canopy measurement with total litter (including beneath the plant canopy) from 75-100% expected. Herbaceous litter depth typically ranges from 10-25 mm. Woody litter can be up to a couple inches (4-6cm).

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
English: 2300-3500 lb/ac (3000 lb/ac average); Metric: 2576-3920 kg/ha (3360 kg/ha average).

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: Bare ground greater than 25% and presence of noxious weeds or Kentucky bluegrass are the most common indicators of a threshold being crossed. Baltic rush, inland sedge, and American licorice are common increasers. Kentucky bluegrass, perennial pepperweed, and Canada thistle are common invasive species.

17. **Perennial plant reproductive capability:** All species are capable of reproducing, except in drought years.
