

## Ecological site R012XY045ID Riparian Wet Meadow Salix/Carex

Last updated: 9/22/2020  
Accessed: 05/08/2024

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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): 012X–Lost River Valleys and Mountains

Land Resource Region: B (Northwestern Wheat and Range)  
MLRA: 12 (Lost River Valleys and Mountains)

EPA EcoRegion: Level III (Middle Rockies)

### LRU notes

012X-Lost River Valleys and Mountains

Additional moisture site:  
<https://soils.usda.gov/survey/geography/mlra/index.html>

### Classification relationships

None.

### Ecological site concept

Site receives additional water.

Soils are:

not saline or saline-sodic.

Deep to very deep, not skeletal within 20" of soil surface.

Season water table <12" along seeps and springs

Not strongly or violently effervescent in surface mineral 10".

Slope is < 30%.

Clay content is = <35% in surface mineral 4".

Site does not have an argillic horizon with > 35% clay.

### Associated sites

R012XY038ID	Meadow DECA18/CANE2
R012XY046ID	Wet Meadow Carex-Juncus
R012XY047ID	Marsh TYLA-SCAC3

### Similar sites

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

## Physiographic features

This site occurs on linear to concave areas on floodplains. Slopes range from 0 to 4 percent on all aspects. Elevations range from 5000 to 5600 feet (1500 to 1700 meters).

**Table 2. Representative physiographic features**

Landforms	(1) Flood plain
Flooding duration	Brief (2 to 7 days) to long (7 to 30 days)
Flooding frequency	Rare to frequent
Ponding duration	Brief (2 to 7 days) to long (7 to 30 days)
Ponding frequency	Rare to frequent
Elevation	1,524–1,707 m
Slope	0–4%
Ponding depth	0–15 cm
Water table depth	0–15 cm

## Climatic features

MLRA 12 is dominated by dramatic changes in elevation which, in turn, influence local weather patterns. The intermontane valleys have elevations as low as 3800 feet, while the adjacent mountains may reach more than 12,600 feet. The average annual precipitation for the entire MLRA, based on 10 long term climate stations located throughout the MLRA, is approximately 9.38 inches. However, the dry valleys may have averages as low as 6 inches, while the upper peaks may have averages that exceed 46 inches per year.

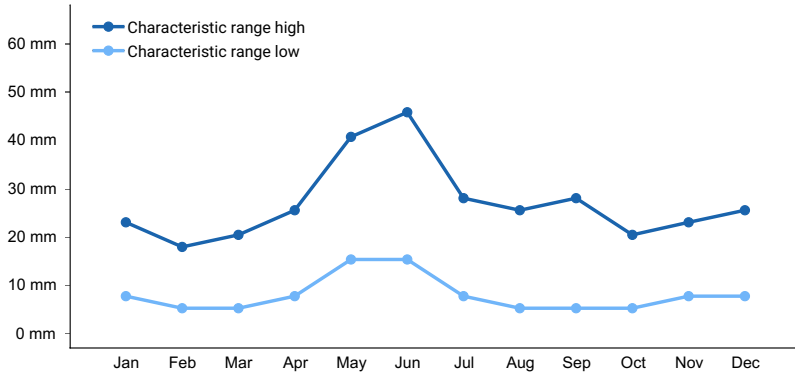
Temperatures vary considerably over the year. The average annual temperature is 42.25 degrees F. The average low is 27.4 degrees while the average high temperature is 57 degrees.

In the summer the sun shines 78% of the time, but drops to 40% in the winter. The prevailing wind is location-dependent, and generally flows parallel to the orientation of the dominant valleys. In the summer localized afternoon upslope winds and evening downslope winds are common. The average windspeed is greatest in the spring and early summer.

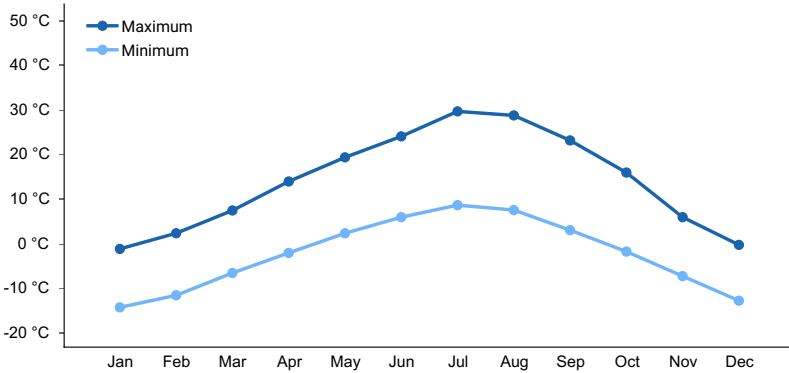
The frost free period ranges from 102 to 107 days while the freeze free period ranges from 134 to 139 days across the MLRA.

**Table 3. Representative climatic features**

Frost-free period (average)	107 days
Freeze-free period (average)	139 days
Precipitation total (average)	279 mm



**Figure 1. Monthly precipitation range**



**Figure 2. Monthly average minimum and maximum temperature**

## Influencing water features

Wetland Description: System Subsystem Class Sub-class

None

Stream Type: no data

## Soil features

The soil surface (0-10inches) is dark grayish brown muck. The subsoil is extremely cobbly coarse sand. The soil is very deep. These soils have a permanent watertable that ranges from 6 inches below the soil surface to 6 inches above the surface.

Soil Series Correlated to this Ecological Site

None

## Ecological dynamics

The dominant visual aspect of this site is grasses and forbs with scattered clusters of shrubs. This site is commonly in complex with meadow and wet meadow range sites in the riparian zone. Composition by weight is approximately 75-85 percent grass and grass-likes, 3-8 percent forbs, and 10-20 percent shrubs.

During the last few thousand years, this riparian site has evolved in a semi-arid climate characterized by dry summers and cold, wet winters. The site has evolved on flood plains that have occasional to frequent and brief to very brief flooding. This flooding scours some areas and deposits sediment in others. This disturbance is necessary to provide exposed moist mineral soil with full sunlight to germinate willow seedlings. Deposition can bury parts of limbs and twigs which will also start new plants. Likewise, scouring can expose existing tree roots that will sprout. A water table at one foot or less in depth is necessary to provide season long moisture for the growth of the shrub (willow) species present.

Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer, Shiras

moose, and Rocky Mountain elk.

Fire has played a role in maintaining the plant community by also providing bare mineral soil with full sunlight to germinate the willow species. Fire can cause sprouting of trees to provide regeneration. The fire frequency on the site is dependent on the frequency of fire on adjacent range sites and moisture in the fuels on the site. The normal fire frequency is 25-100 years.

The Historic Climax Plant Community (HCPC), the Reference State (State 1) moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The Reference Plant Community Phase is Phase A. This plant community is dominated by an overstory of the following willow species: Geyer, Booths, Wolf, and Drummond. The herbaceous layer is dominated by beaked sedge, water sedge, Baltic rush, bluejoint, and western polemonium. The plant species composition of Phase A is listed later under "Reference Plant Community Phase Plant Species Composition".

The total annual production is 2800 pounds per acre (3111 kilograms per hectare) in a normal year. Production in a favorable year is 3600 pounds per acre (4000 kilograms per hectare). Production in an unfavorable year is 2000 pounds per acre (2222 kilograms per hectare). Structurally, grasses and grass-likes are very dominant followed by shrubs being more dominant than perennial forbs.

#### FUNCTION:

This site is suited for livestock grazing in late summer and fall. This site is usually heavily used by livestock, particularly in the summer. Prescribed grazing must be planned to avoid degradation of the site. Special management should be used to protect the adjacent water courses and the associated values. This is an important site for wildlife for food and cover. If the site is associated with perennial streams, a fisheries resource could also be present. Degradation of the site can occur with improper grazing management and down cutting of the adjacent stream course or upper watershed conditions that alter the flood frequency or duration. Hikers and fisherman often traverse the edges of this site. Picnickers and campers frequent the site in late summer and early fall.

Impacts on the Plant Community.

#### Influence of fire:

This site usually does not burn from wildfire. If a fire occurs, it usually does not adversely affect the plant community. Most plants including shrubs sprout back with sufficient moisture and/or during the next growing season.

#### Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. Fall use year after year, will result in excessive utilization on the willow regeneration. This may lead to a single age class stand of willows. Under this type of management, they will develop a "tunneled" appearance. Uncontrolled beaver populations may eliminate the overstory component. Due to improper grazing management grasses, forbs, and shrubs can all decline in the plant community. Shrubs usually increase initially, but with continued improper management, will decline.

Continued improper grazing management will result in a stand of forbs and exotic grasses such as Kentucky bluegrass, Reed canarygrass, and meadow foxtail, all with reduced vigor. The ability of the community to withstand seasonal flooding is reduced and down cutting of adjacent streams can result. This down cutting will lower the water table and thereby reduce the potential of the site. This site is particularly difficult to manage because animals seek out the site for shade and it is usually adjacent to water.

Proper grazing management that addresses frequency, duration, and intensity of grazing can maintain the integrity of the plant community and the water table on which it is dependent. Upstream watershed conditions must be maintained to have normal run-off events including moderate flooding.

#### Weather influences:

Because of the deep soils, the influence of the water table, seasonal flooding and run-on, the production of this site changes little during wet or dry precipitation years. The overall production can be adversely influenced with prolonged drought. Prolonged drought can also increase fire frequency. Overall plant composition is normally not affected when perennials have good vigor.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the run-off and flooding. An early, hard freeze can occasionally kill some plants. An early frost can stop the growth of shrubs.

Influence of insects and disease:

Periodic disease and insect outbreaks can affect vegetation health. An outbreak of a particular insect is usually influenced by weather but no specific data for this site is available.

Influence of noxious and invasive species:

Annual and perennial invasive species can compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory. There are several noxious or invasive plant species that are adapted to this site.

Influence of wildlife:

This site is important for many species of mammals and birds for food and life cycles. Total numbers are seldom high enough to adversely affect the plant community. The site is primarily used in the late spring, summer, and fall by big game. Many birds use the site for food, nesting, or brood rearing in the late spring, summer, and fall.

Watershed:

The largest threat to site degradation is a lowering of the water table and a change in flooding characteristics either from incised channels or upstream conditions. Off-site conditions can affect the gradient of adjacent stream channels that can affect the water table. If the perennial grass, sedge, and shrub cover is depleted, down cutting can be accelerated within the site. High run-off events from the adjacent uplands can severely damage or change the normal stream channel on the site. As the water table is lowered, productive potential is lost. Eventually the water table is below the root zone of the adapted perennial grasses, sedges, and shrubs. These plants are ultimately replaced by perennial forbs and shallow rooted grasses. Extreme down cutting and lowering of the water table can move the site across the threshold to a new, less productive site. Severe down-cutting can result in a plant community that resembles an upland site. Reducing the frequency of flooding can adversely affect the regeneration of willow, leading to an overstory of decadent older shrubs with no younger shrubs being established for stand replacement.

Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1.

Phase A to B. Develops with improper grazing management.

Phase B to A. Results from prescribed grazing.

State 1 to State 2. Develops through permanently lowering the late growing season water table to 20-40 inches. This can occur with continued improper grazing management. It may also occur with proper grazing on the site, but channel erosion may continue if poor off-site conditions cause frequent and/or severe flooding. The site has crossed the threshold. This state cannot be returned to State 1 without raising the water table. This might be done over time using "hard" structures or bio-engineered structures, but the plant community may take many years to approach the plant community in State 1.

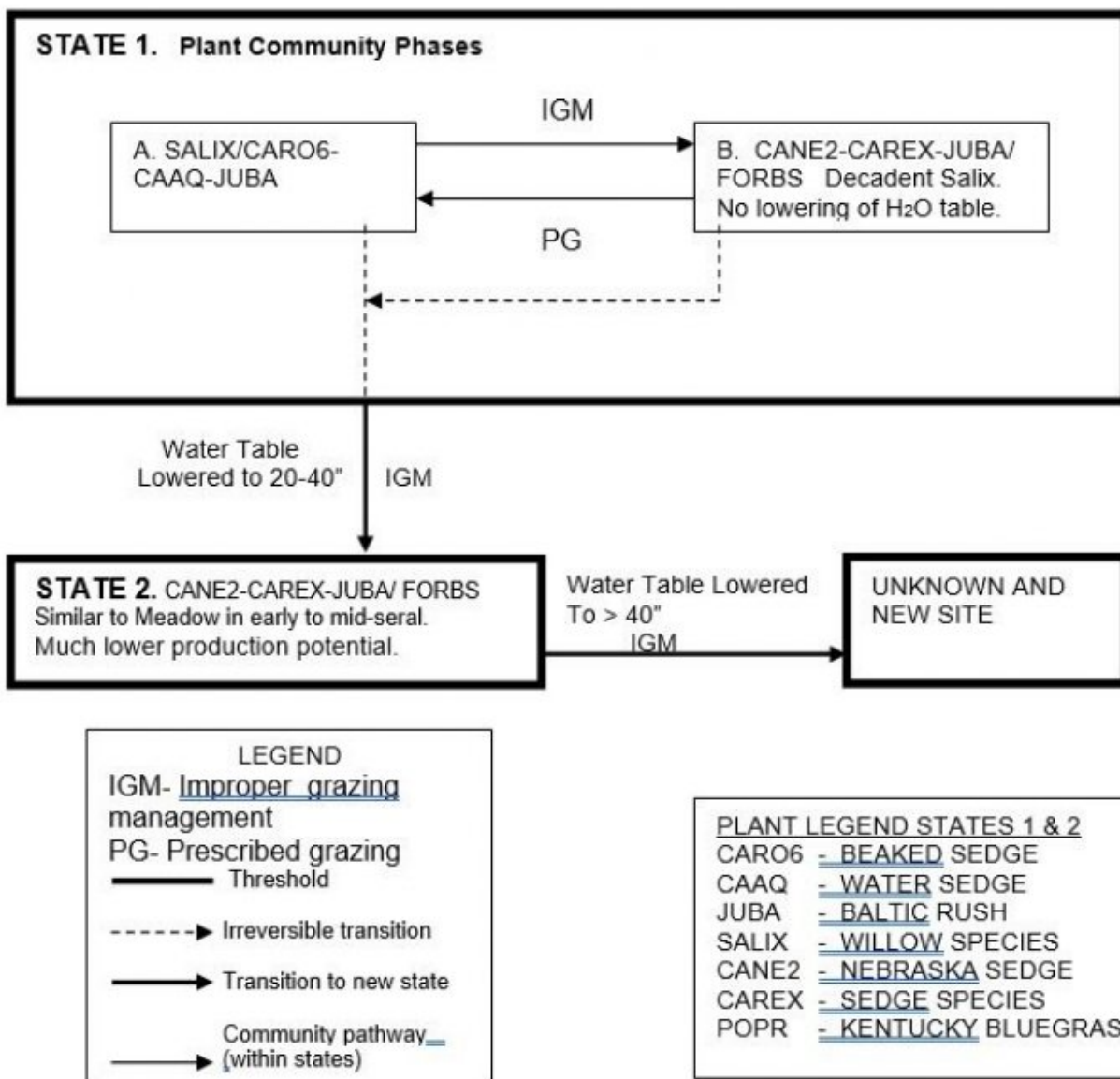
State 2 to unknown site. Results from continued lowering of the water table to greater than 40 inches through down

cutting of the stream channel. The site crosses the threshold and retrogresses to a new site with reduced potential due to significant loss of available soil moisture from the lowered water table. It occurs with continued improper grazing management or repeated significant run-off events. This state cannot be returned to State 1 without raising the water table. This might be done over time using "hard" structures or bio-engineered structures, but the plant community may take many years to approach the plant community in State 1.

**Practice Limitations.**

There are moderate to severe seeding limitations on this site due to difficulty in preparing an adequate seedbed. Elimination of existing vegetation prior to planting is difficult in wet seasons and high water table periods. Grade stabilization structures may be needed to prevent further down-cutting of the channel. Other options for rehabilitation may include application of fertilizer, prescribed grazing, and off-site livestock water development. Fencing of the site for better livestock control might also be a consideration.

**State and transition model**



**State 1**  
**State 1 Phase A**

**Community 1.1**

## State 1 Phase A

State 1, Phase A. Reference Plant Community Phase. This plant Community has beaked sedge, water sedge, and Baltic rush dominant in the herbaceous layer. There is a variety of perennial forbs but none comprise a high percentage of the plant community. Salix species are present in the overstory and make up 10-20% percent of the community.

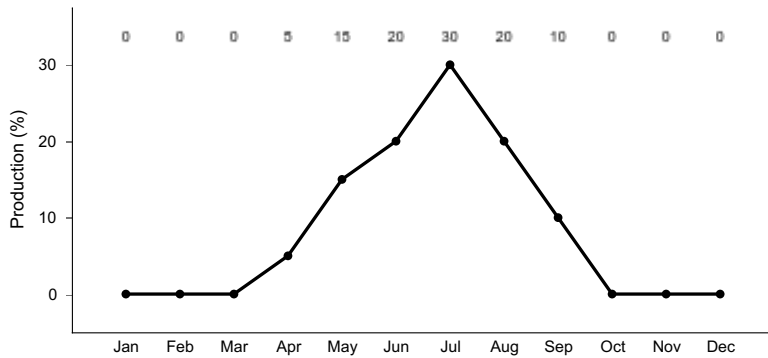


Figure 3. Plant community growth curve (percent production by month). ID0714, RIPARIAN - B12. STATE 1.

## State 2 State 1 Phase B

### Community 2.1 State 1 Phase B

State 1, Phase B. This plant community is dominated by Nebraska sedge and other sedges and Baltic rush. Forbs have increased in the community and Kentucky bluegrass may have invaded. The willows have a “tunneled” or hedged appearance and are even-aged. The soil surface may have hummocks. This phase has developed due to improper grazing management. The water table has not been lowered from that of Phase A.

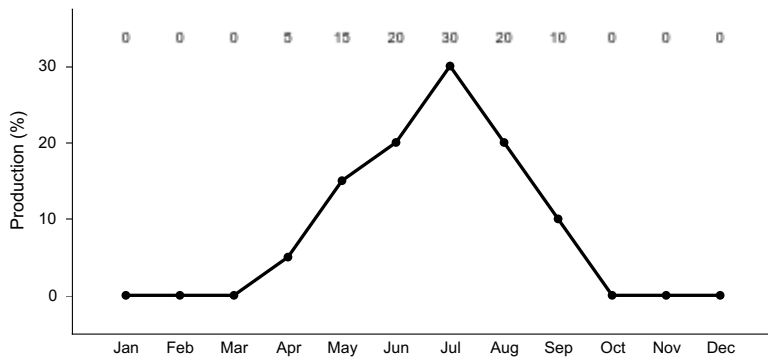


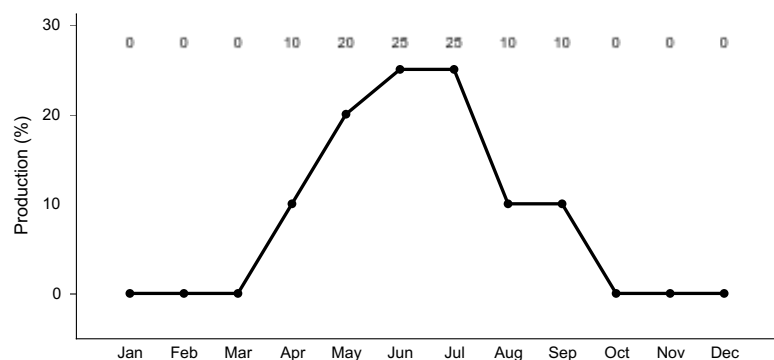
Figure 4. Plant community growth curve (percent production by month). ID0714, RIPARIAN - B12. STATE 1.

## State 3 State 2

### Community 3.1 State 2

State 2. This plant community is dominated by Nebraska sedge and other sedges and Baltic rush but the overall production potential of the site is much lower than State 1. There is an increase in forbs and grasses that require less soil moisture. Kentucky bluegrass, redtop bentgrass, and meadow foxtail may have invaded the community. This state developed due to continued improper grazing management and a permanent lowering of the water table from 6 inches down to 20-40 inches below the surface. This state can be similar to Meadow or Dry Meadow. The site has crossed the threshold. This state cannot be returned to State 1 without raising the water table. This might be done over time using “hard” structures or bio-engineered structures, but the plant community may take many

years to approach the plant community in State 1.



**Figure 5. Plant community growth curve (percent production by month). ID0715, RIPARIAN - B12. STATE 2.**

## State 4 State 3

### Community 4.1 State 3

Unknown new site: This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant loss of available soil moisture has occurred due to further lowering of the water table to greater than 40 inches. Some soil loss from the surface has occurred. This state has developed due to continued improper grazing management and lowering of the water table. The new site may be similar to upland sites such as Loamy Bottom, Clay Basin 12-16, or other Loamy sites. This state cannot be returned to State 1 without raising the water table. This might be done over time using “hard” structures or bio-engineered structures, but the plant community may take many years to approach the plant community in State 1.

## Additional community tables

### Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This riparian ecological site provides diverse habitat for wetland and upland wildlife species. The long duration hydrology results in abundant forage and seasonal water, attracting invertebrate and vertebrate animals to the ecological site. Important seasonal habitat is provided for over 80% of adjacent rangeland resident and migratory animals including western toad, western rattlesnake, shrews, bats, jackrabbits, ground squirrels, mice, coyote, red fox, badger, sage-grouse, Ferruginous hawk, prairie falcon, horned lark, and western meadowlark. Large herbivore use of this ecological site includes mule deer, elk, and moose. Native reptiles and amphibians are reliant on these riparian sites throughout the year. Loss of site hydrology significantly reduces the habitat value of the adjacent ecological sites. Open water is seasonal being provided by seasonal runoff, ponding, flooding, seasonal high water table, and natural springs.

State 1 Phase 1.1 –Willow Species/ Beaked Sedge/ Water Sedge/ Baltic Rush Reference Plant Community (RPC): The RPC provides a diversity of herbaceous and woody plants used by native insect communities who assist in pollination. The insects are food for the many predator species utilizing the site. The reptile and amphibian community is represented by leopard lizard, western skink, rubber boa, western rattlesnake, western toad, boreal chorus frog, and northern leopard frog. A diverse amphibian population is a key indicator of good ecological health on this site. Loss of hydrology will limit or exclude amphibians from this ecological site. Sage-grouse utilize the meadows as summer and fall brood-rearing habitat. Woody vegetation adds horizontal and vertical structure for nesting and roosting sites for resident and migratory avian species. Bird species can include warbling vireo, black-capped chickadee, MacGillivray’s warbler, fox sparrow, song sparrow, common snipe, long-billed curlew, and a variety of waterfowl that utilize the plant community for breeding and nesting cover. The plant community provides summer and fall forage needs for large mammals (mule deer, elk, and moose). Thermal and young of year cover for ungulates is provided by woody vegetation within the plant community. Small mammal populations include deer



mouse, montane vole, and western jumping mouse.

**State 1 Phase 1.2- Nebraska Sedge/ Sedge Species/ Baltic Rush/ Forbs Plant Community:** This plant community is the result of improper grazing management. Insect diversity and populations would be similar to Phase 1.1. With the hydrologic conditions similar to Phase 1.1, amphibian use would still occur and prey species would be abundant. Improper grazing management would reduce the habitat cover value for reptiles and amphibians. The plant community provides summer and fall brood-rearing habitat for sage-grouse when sagebrush cover is nearby. Bird species can include warbling vireo, black-capped chickadee, MacGillivray's warbler, fox sparrow, song sparrow, common snipe, and long-billed curlew. Limited thermal and young of year cover for ungulates is provided with isolated patches of woody vegetation. The dominant plant community is preferred forage for deer and elk but improper grazing management would decrease the amount of available forage in the summer and fall. Small mammal populations and diversity would be reduced under an improper grazing management scenario that reduces vertical structure and increases vulnerability to predators.

**State 2 – Nebraska Sedges/ Sedge Species Baltic Rush/ Forbs Plant Community:** This state has developed due to a permanent lowering of the water table and improper grazing management. Loss of historic hydrology has reduced the habitat value for many animals present in State 1. The increase in forbs would support a high diversity and population of pollinators. The loss of historic hydrology will limit or exclude use of the site by amphibians and many reptiles. Suitable habitat cover for the northern leopard frog, a species of concern, would not be provided. With continued improper grazing management the loss of vertical and horizontal structure would reduce diversity and populations of species of birds identified in State 1. The site would be more suitable for killdeer, western meadowlark, and horned lark. Birds of prey (northern harrier and Cooper's hawk) may range throughout this area looking for prey species. With improper grazing management, forage for ungulates would be available for a shorter length of time in the summer and fall. Small mammal diversity would shift to grass seed eating species (deer mouse) due to increased grass species in the plant community. Predation on small mammals would increase due to poor quality cover habitat.

#### Grazing Interpretations.

This site is best adapted to late summer and fall grazing by domestic livestock.

Prescribed grazing must be planned to avoid degradation of the site. Special management should be used to protect the adjacent water courses and the associated values.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use, and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings.

### **Hydrological functions**

Degradation of the site can occur with improper grazing management and down cutting of the adjacent stream course or upper watershed conditions that alter the flood frequency or duration.

### **Recreational uses**

This site presents an aesthetically pleasing view of lush vegetation consisting primarily of grasses and grass-like plants. When livestock or big game are grazing or browsing on the site it presents a pleasant pastoral panorama. Hikers and fisherman often traverse the edges of this site. Picnickers and campers frequent the site in late summer and early fall as sometime adjacent shaded wooded areas become less pleasant on cool days. Vehicular use can be very detrimental to this site, especially during wet weather and high water table conditions.

### **Wood products**

None.

### **Other products**

None.

## Other information

### Field Offices

Arco, ID  
Challis, ID  
Rexburg, ID  
Rigby, ID  
Salmon, ID

## Inventory data references

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include:

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC  
Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC  
Brendan Brazee, State Rangeland Management Specialist, NRCS, Idaho  
Jim Cornwell, Range Management Specialist, IASCD  
Lee Brooks, Range Management Specialist, IASCD  
Kristen May, Resource Soil Scientist, NRCS, Idaho

## Other references

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush-Grass Habitat Types of Southern Idaho. University of Idaho, Moscow, Idaho. Bulletin Number "35".  
USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.  
USDA, NRCS.2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA  
USDA, Forest Service, Fire Effects Information Database. 2004. [www.fs.fed.us/database](http://www.fs.fed.us/database).  
USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service, Agricultural Research Service; Interpreting Indicators of Rangeland Health. Technical Reference 1734-6; Version 4-2005.

## Approval

Kendra Moseley, 9/22/2020

## 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.

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Date	04/21/2009
Approved by	Kendra Moseley
Approval date	

## Indicators

1. **Number and extent of rills:** rills do not occur on this site.

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2. **Presence of water flow patterns:** water flows over and through the plant community due to frequent flooding. Flows can scour the soil surface or deposit sediments. Rarely are flows detrimental to the shrub components of the plant community. These plants have adapted or evolved with this occurrence. Understory species can be damaged, removed or buried.

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3. **Number and height of erosional pedestals or terracettes:** neither occurs on this site as classically defined. Scouring can expose some roots. Shrub species have evolved with this occurrence and will sprout from the roots. Deposition areas can give a hummocky surface.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** data is not available. On sites in mid-seral status bare ground may range from 2-10 percent. Immediately following a significant flood event, bare ground may be as high as 10-20 percent.

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5. **Number of gullies and erosion associated with gullies:** gullies do not occur on this site.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** from wind does not occur. Scouring and depositional areas do occur from flooding.

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7. **Amount of litter movement (describe size and distance expected to travel):** fine litter in the interspaces may move 6 feet or more or off the site due to seasonal flooding. Coarse litter can move within the site or off the site due to flooding. Some debris may hang up or be deposited in piles within the site. .

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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):** values should range from \_ to \_ but needs to be tested.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** the soils may not show distinct horizons due to poorly developed soils. Surface color is dark grayish brown. The A or A1 horizon is typically 1 to 10 inches thick.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** a mixed age stand of shrubs is needed to slow run-off and increase infiltration. The plant community is more dependent on moisture from the water table than on infiltration. The water table controls

rooting depth.

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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):** not present.
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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: grasses and grass-likes

Sub-dominant: shrubs

Other: forbs

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** normal mortality of grass, grass-likes, and forbs occur with scouring and deposition from flooding. Some mortality can occur in the herbaceous layers as shrub canopy closes. Decadence and mortality of the willow component can occur with age, disease, and beaver activity.
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14. **Average percent litter cover (%) and depth ( in):** additional litter cover data is needed but is expected to be \_\_\_percent to a depth of 0.5-1.5 inches at the end of the growing season, but maybe removed following flooding.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** is 2800 pounds per acre (3111 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses and sedges produce 75-85 percent of the total production, forbs 3-8 percent, and shrubs 10-20 percent.
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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:** includes whitetop, leafy spurge, dock, Canadian thistle, reed canarygrass, foxtail barley, perennial pepperweed, purple loosestrife, and teasel. Other invasive species may include meadow foxtail, redtop and Kentucky bluegrass.
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17. **Perennial plant reproductive capability:** all functional groups have the potential to reproduce in most years. Many of the plants reproduce vegetatively.
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