

Ecological site R032XY378WY

Wetland (WL)

10-14" East Precipitation Zone

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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

R032XY328WY	Lowland (LL) 10-14" East Precipitation Zone
R032XY338WY	Saline Lowland (SL) 10-14" East Precipitation Zone
R032XY342WY	Saline Subirrigated (SS) 10-14" East Precipitation Zone
R032XY374WY	Subirrigated (Sb) 10-14" East Precipitation Zone

Similar sites

R032XY278WY	Wetland (WL) 5-9" Wind River Basin Precipitation Zone
R032XY178WY	Wetland (WL) 5-9" Big Horn Basin Precipitation Zone

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site normally occurs on level to nearly level bottomlands near springs, seeps and sloughs.

Table 2. Representative physiographic features

Landforms	(1) Drainageway (2) Oxbow (3) Stream terrace
Flooding duration	Very brief (4 to 48 hours) to long (7 to 30 days)
Flooding frequency	Occasional to frequent
Ponding duration	Brief (2 to 7 days) to very long (more than 30 days)
Ponding frequency	Frequent
Elevation	1,650 – 2,290 m
Slope	0 – 10 %
Ponding depth	0 – 30 cm
Water table depth	0 – 50 cm
Aspect	Aspect is not a significant factor

Climatic features

Annual precipitation ranges from 10-14 inches per year. The normal precipitation pattern shows the least amount of precipitation in December, January, and February, increasing to a peak during the latter part of May. Amounts decrease through June, July, and August and then increase some in September. Much of the moisture that falls in the latter part of the summer is lost by evaporation and much of the moisture that falls during the winter is lost by sublimation. Average snowfall exceeds 20 inches annually. 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, due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Chinook winds may occur in winter and bring rapid rises in temperature. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring.

Winds are generally not strong as compared to the rest of the state. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 75 mph.

Growth of native cool-season plants begins about April 15 and continues to about July 15. Cool weather and moisture in September may produce some green up of cool season plants that will continue to late October.

The following information is from the "Thermopolis 2" climate station:

Minimum Maximum 5 yrs. out of 10 between

Frost-free period (days): 74 149 May 23 – September 16

Freeze-free period (days): 112 180 May 8 – October 1

Annual Precipitation (inches): 7.6 21.9

Mean annual precipitation: 12.35 inches

Mean annual air temperature: 46.2 F (30.1 F Avg. Min. to 62.3 F Avg. Max.)

For detailed information visit the Natural Resources Conservation Service National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/> website. Other climate station(s) representative of this precipitation zone include" Grass Creek 1E", "Thermopolis", Thermopolis 25NW", "Buffalo Bill Dam" and "Black Mountain".

Table 3 Representative climatic features

Frost-free period (average)	150 days
Freeze-free period (average)	180 days
Precipitation total (average)	360 mm

Influencing water features

Stream Type: C (Rosgen)

Soil features

This site consists of deep to very deep poorly drained soils formed in alluvium with a water table above the surface for part but not all of the growing season. They are on nearly level to slightly depressed areas with poor surface drainage. In some places the surface layers have a high organic matter content. is Layers of the soil most influential to the plant community vary from 3 to 6 inches thick.

Major Soil Series correlated to this site include: fluvaquents

Other Soil Series in MLRA 58B correlated to this site include: Connerton, Haverson

Table 4. Representative soil features

Surface texture	(1) Mucky clay (2) Clay loam (3) Loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to poorly drained
Permeability class	Slow to moderate
Soil depth	50 – 150 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified

Available water capacity (0-101.6cm)	5.59 – 16.76 cm
Calcium carbonate equivalent (0-101.6cm)	10 – 20 %
Electrical conductivity (0-101.6cm)	0 – 20 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0 – 20
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

Potential vegetation on this site is dominated by plants that can tolerate soils that have a water table above the surface for part of the growing season. The expected potential composition for this site is about 75% grasses, 5% forbs and 20% woody plants. The composition and production will vary naturally due to historical use, fluctuating precipitation and fire frequency.

As this site deteriorates, species such as willows, low-growing sedges, cattails, and Baltic rush increase. Foxtail barley often invades. Grasses and grass-like plants such as Nebraska sedge, bluejoint reedgrass, and tufted hairgrass will decrease in frequency and production. Cattails, although native, are prolific producers and can become so thick that a monoculture emerges when adjacent to open water. Once dominant, cattails become difficult to impossible to remove. Methods of control usually require a multiple approach such as burning, grazing, and flooding.

Encroachment by saltcedar and Russian olive can also occur. This can happen regardless of any major disturbance. Stopping this invasion before these plants become established is imperative. Once established total removal is usually not likely. Methods of control usually requires a multiple approach and includes mechanical (cutting or mowing), flooding, burning, chemical, and biological.

The Historic Climax 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				908-1816	
	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	908-1816	–
2				908-1513	
	slough sedge	CAOB3	<i>Carex obnupta</i>	908-1513	–
3				908-1816	
	tufted hairgrass	DECE	<i>Deschampsia cespitosa</i>	908-1816	–
4				303-1211	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-303	–
	water sedge	CAAQ	<i>Carex aquatilis</i>	0-303	–
	golden sedge	CAAU3	<i>Carex aurea</i>	0-303	–
	Macoun's reedgrass	CACAM	<i>Calamagrostis canadensis var. macouniana</i>	0-303	–
	inland sedge	CAIN11	<i>Carex interior</i>	0-303	–
	flatsedge	CYPER	<i>Cyperus</i>	0-303	–
	mountain rush	JUARL	<i>Juncus arcticus ssp. littoralis</i>	0-303	–
	rush	JUNCU	<i>Juncus</i>	0-303	–
Forb					
5				0-605	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-303	–
	silverweed cinquefoil	ARAN7	<i>Argentina anserina</i>	0-303	–
	scouringrush horsetail	EQHY	<i>Equisetum hyemale</i>	0-303	–
	Rocky Mountain iris	IRMI	<i>Iris missouriensis</i>	0-303	–
	rough bugleweed	LYAS	<i>Lycopus asper</i>	0-303	–
	waterhorehound	LYCOP4	<i>Lycopus</i>	0-303	–
	wild mint	MEAR4	<i>Mentha arvensis</i>	0-303	–
	common plantain	PLMA2	<i>Plantago major</i>	0-303	–
	alkali buttercup	RACY	<i>Ranunculus cymbalaria</i>	0-303	–
	sagebrush buttercup	RAGL	<i>Ranunculus glaberrimus</i>	0-303	–
	blue-eyed grass	SISYR	<i>Sisyrinchium</i>	0-303	–
	marsh hedgenettle	STPA	<i>Stachys palustris</i>	0-303	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-252	–
	American sloughgrass	BESY	<i>Beckmannia syzigachne</i>	0-252	–
	reedgrass	CALAM	<i>Calamagrostis</i>	0-252	–
	flatsedge	CYPER	<i>Cyperus</i>	0-252	–
	fowl mannagrass	GLST	<i>Glyceria striata</i>	0-252	–
	rush	JUNCU	<i>Juncus</i>	0-252	–
	reed canarygrass	PHAR3	<i>Phalaris arundinacea</i>	0-252	–
	bluegrass	POA	<i>Poa</i>	0-252	–
	bulrush	SCIRP	<i>Scirpus</i>	0-252	–
	alkali cordgrass	SPGR	<i>Spartina gracilis</i>	0-252	–
Shrub/Vine					

6				303-908	
	willow	SALIX	<i>Salix</i>	303-908	–
7				0-303	
	redosier dogwood	COSE16	<i>Cornus sericea</i>	0-303	–
8				0-303	
	Woods' rose	ROWOW	<i>Rosa woodsii</i> var. <i>woodsii</i>	0-303	–
9				0-303	
	water birch	BEOC2	<i>Betula occidentalis</i>	0-303	–
10				0-303	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	0-303	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 5.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 6.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 11. Community 7.1 plant community composition

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

Animal Community – Wildlife Interpretations Nebraska Sedge/Tufted Hairgrass/Willow Plant Community: The predominance of grasses in this plant community favors grazers and mixed-feeders, such as bison, elk, and antelope. Suitable thermal and escape cover for deer may be limited due to the low quantities of woody plants. This plant community may provide brood rearing/foraging areas for upland game birds. Other birds that would frequent this plant community include red-wing blackbirds, sandhill cranes, Wilson snipe, western meadowlarks, and golden eagles. Many small mammals would occur here. Mid-Sedge/Willow Plant Community: The abundant production and proximity to water make this state important for livestock and wildlife such as birds, mule deer, and whitetail deer. This plant community is useful for the same large grazers that would use the Historic Climax Plant Community. The increase in willow production makes this even more attractive to some wildlife due to the increase in thermal and escape cover. It can provide foraging and nesting opportunities for upland game birds and songbirds. Low-Sedge/Baltic Rush Plant Community: The abundant production and proximity to water make this state important for livestock and wildlife such as birds, mule deer and whitetail deer. 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 upland game birds and songbirds, when it occurs proximal to woody cover. Cattail/Low-Sedge Plant Community: The abundant production and proximity to water make this state important for livestock and wildlife such as birds, mule deer, and whitetail deer. This plant community is useful for the same large grazers that would use the Historic Climax Plant Community. The increase in cattail production makes this even more attractive to some wildlife due to the increase in thermal and escape cover. It can provide foraging and nesting opportunities for upland game birds and songbirds. Mixed Sedge/Cattail Plant Community: The abundant production and proximity to water make this state important for livestock and wildlife such as birds, mule deer, and whitetail deer. This plant community is useful for the same large grazers that would use the Historic Climax Plant Community. The increase in cattail production makes this even more attractive to some wildlife due to the increase in thermal and escape cover. It can provide foraging and nesting opportunities for upland game birds and songbirds. Mixed Sedge/Saltcedar and/or Russian Olive Plant Community: The abundant production and proximity to water make this state important for livestock and wildlife such as birds, mule deer, and whitetail deer. This plant community is useful for the same large grazers that would use the Historic Climax Plant Community. The increase in tall shrubs production makes this even more attractive to some wildlife due to the increase in thermal and escape cover. It can provide foraging and nesting opportunities

for upland game birds and songbirds. Some species utilize the Russian olive berries for food and are attracted to these colonized areas. Saltcedar and/or Russian Olive/Annuals Plant Community: The proximity to water makes this state important for wildlife such as birds, mule deer, and whitetail deer. This is useful for the same large grazers that would use the Historic Climax Plant Community. The low production of herbaceous understory of this plant community decreases the foraging potential and cover for many wildlife species. The increase in tall shrubs, however, makes this an attractive site for thermal and escape cover for large grazers and upland birds. It can provide foraging and nesting opportunities for songbirds. Some species utilize the Russian olive berries for food and are attracted to these colonized areas. 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. If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor. Plant Community Production Carrying Capacity* (lb./ac) (AUM/ac) Historic Climax Plant Community 4500-6500 3.0 Mid-Sedge/Willow 4200-6200 2.5 Low-Sedge/Baltic Rush 3600-5000 1.5 Cattail/Low Sedge 4000-5000 1.5 Mixed Sedge/Cattail 4200-5800 2.5 Mixed Sedge/Saltcedar and/or Russian Olive 4600-5400 2.0 Saltcedar and/or Russian Olive Stand/Annuals 3500-4800 1.0 * - 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 B and C, with localized areas in hydrologic group D. Infiltration and runoff potential for this site varies from moderate to high depending on soil hydrologic group and water table. Runoff will be high on this site since the soil may be saturated. (Refer to Part 630, NRCS National Engineering Handbook for detailed hydraulic information. Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Litter typically falls in place, and signs of movement are not common. Chemical and physical crusts are rare to non-existent. Cryptogamic crusts are present, but only cover 1-2% of the soil surface.

Recreational uses

This site provides hunting opportunities for upland game species. The wide varieties of plants which bloom from spring until fall have an esthetic value that appeals 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 inventory data. Field observations from range trained personnel were also used. Those involved in developing this site include: Chris Krassin, Range Management Specialist, NRCS and Everet Bainter, Range Management Specialist. Other sources used as references include USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, USDI and USDA Interpreting Indicators of Rangeland Health Version 3, and USDA NRCS Soil Surveys from various counties.

Contributors

D. Tranas

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)	Ray Gullion, E. Bainter
Contact for lead author	ray.gullion@wy.usda.gov or 307-347-2456
Date	05/02/2008
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 1%.

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 exhibits slight movement only associated with water flow patterns.

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 variable, typically an A-horizon up to 12 inches (30 cm) colors with chromas of 2 or less and OM of 3-6%. Sometimes the A-horizon is overlain or replaced by an O-horizon of up to 30 inches (76 cm) with 40-60% OM.
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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Plant community consists of 70-90% grasses, 10% forbs, and 0-15% shrubs. Dense plant canopy (95-100%) and litter plus moderate infiltration rates result in minimal to nonexistent runoff. Basal cover is typically greater than 5% for this site and effectively reduces runoff on this site.
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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):** No compaction layer exists.
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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: rhizomatous grass-likes>>mid-size, cool season bunchgrasses>cool season rhizomatous grasses>perennial forbs=perennial shrubs
- Sub-dominant:
- Other:
- Additional:
-
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.
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14. **Average percent litter cover (%) and depth (in):** Litter ranges from 1-5% of total canopy measurement with total litter (including beneath the plant canopy) from 90-100% expected. Herbaceous litter depth typically ranges from 15-30 mm. Woody litter can be up to a couple inches (4-6cm).
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** English: 4500-6500 lb/ac (5500 lb/ac average); Metric: 5040-7280 kg/ha (6160 kg/ha average).
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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:** Bare ground greater than 20% and presence of noxious weeds or creeping meadow foxtail are the most common indicators of a threshold being crossed. Willows, low-growing sedges, cattails and Baltic rush are common increasers. Canada thistle, foxtail barley and water hemlock are common

invasive species.

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