

Ecological site R010XA028ID Dry Meadow 8-15 PZ PONE3-PHAL2

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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): 010X–Central Rocky and Blue Mountain Foothills

This MLRA is characterized by gently rolling to steep hills, plateaus, and low mountains at the foothills of the Blue Mountains in Oregon and the Central Rocky Mountains in Idaho. The geology of this area is highly varied and ranges from Holocene volcanics to Cretaceous sedimentary rocks. Mollisols are the dominant soil order and the soil climate is typified by mesic or frigid soil temperature regimes, and xeric or aridic soil moisture regimes. Elevation ranges from 1,300 to 6,600 feet (395 to 2,010 meters), increasing from west to east. The climate is characterized by dry summers and snow dominated winters with precipitation averaging 8 to 16 inches (205 to 405 millimeters) and increasing from west to east. These factors support plant communities with shrub-grass associations with considerable acreage of sagebrush grassland. Big sagebrush, bluebunch wheatgrass, and Idaho fescue are the dominant species. Stiff sagebrush, low sagebrush, and Sandberg bluegrass are often dominant on sites with shallow restrictive layers. Western juniper is one of the few common tree species and since European settlement has greatly expanded its extent in Oregon. Nearly half of the MLRA is federally owned and managed by the Bureau of Land Management. Most of the area is used for livestock grazing with areas accessible by irrigation often used for irrigated agriculture.

For further information, see "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, 2006)" available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053624

Ecological site concept

- Site occurs on bottomlands
- Slopes less than 8%
- Water table present for most of the growing season
- Water at or near the surface at beginning of the growing season and greater than 40 inches at the end of the growing season

Associated sites

R010XA016ID	Quaking Aspen 20+ PZ POTR5 Adjacent depressions with slopes greater than 10% supporting aspen communities
R010XA027ID	Meadow DECA18-CANE2 Adjacent meadows at lower landscape positions relative to water sources

Similar sites

R010XA027ID	Meadow DECA18-CANE2 Water at or near the surface at beginning of growing season and down to 20-40 inches at the end of the growing season
R010XA042ID	Loamy Bottom 12-16 PZ LEC14 Water table usually not present
R010XA039ID	Wet Meadow Carex/Juncus Water at or near the surface at beginning of growing season and down to 10-20 inches at the end of the growing season

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Poa nevadensis</i> (2) <i>Phleum alpinum</i>

Physiographic features

This site occurs on gently sloping topography in small stream and high mountain valleys. Slopes are generally less than 5 percent. The site is frequently cut by old stream courses. Elevation ranges from 3500 to 7500 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain valleys or canyons > Valley
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Very rare to rare
Ponding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Ponding frequency	Rare
Elevation	3,500–7,500 ft
Slope	0–5%
Ponding depth	0–12 in
Water table depth	0–40 in
Aspect	Aspect is not a significant factor

Climatic features

The Big and Little Wood River Foot slopes and Plains, proposed as MLRA 10X, has a mean elevation of 5310 feet above sea level, and varies from 3600 to 9235 feet. In general, average annual precipitation is greatest on the western side, with the southeast area being the driest. The average annual precipitation, based on 7 long term climate stations located throughout the MLRA, is 15.39 inches, with an extended range of 12.5 to 18 inches in the dryer zone. Monthly precipitation is generally greatest at the end of the year, diminishes steadily until a low in July and August, then increases rapidly in the autumn. Monthly temperatures can vary considerably. Highs of up to 102° and lows down to -52° Fahrenheit have been recorded. The average annual temperature is 42.9°. The frost-free period ranges from 75 to 98 days. The freeze-free period is a bit longer: 106 to 133 days.

Both morning and afternoon average relative humidity values peak in the winter, and reach their low in July and August. The average number of sunny, cloud-free days is above average for the summer months, but below average for the period from November through February.

Table 3. Representative climatic features

Frost-free period (characteristic range)	75-98 days
Freeze-free period (characteristic range)	106-133 days

Precipitation total (characteristic range)	8-15 in
Frost-free period (actual range)	
Freeze-free period (actual range)	
Precipitation total (actual range)	8-18 in
Frost-free period (average)	86 days
Freeze-free period (average)	120 days
Precipitation total (average)	12 in

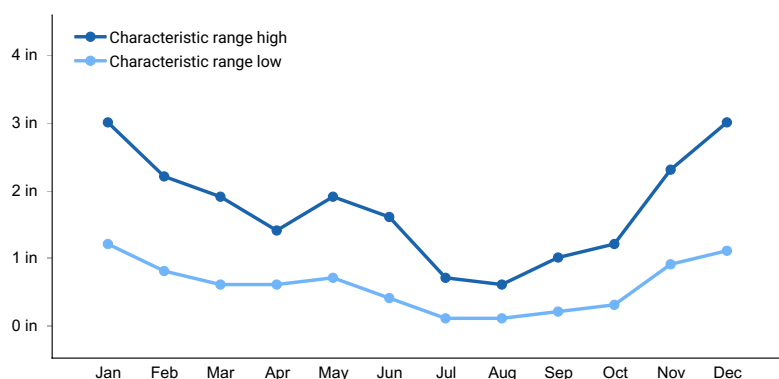


Figure 1. Monthly precipitation range

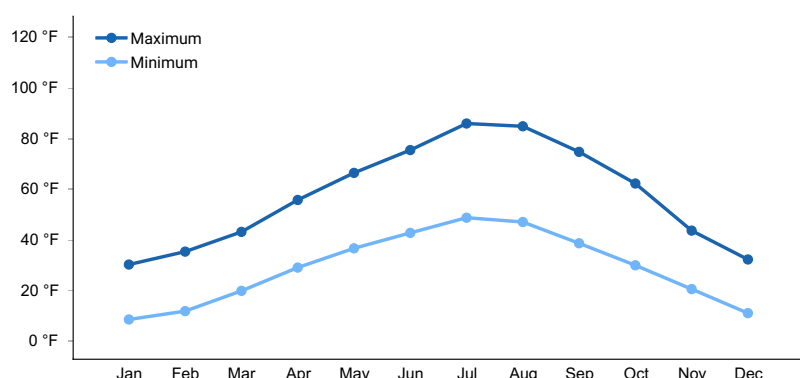


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

This site is influenced by adjacent streams or run on.

Wetland description

This site is influenced by adjacent wetlands.

Soil features

The soils on this site are moderately well drained and have moderate to moderately slow permeability. The water table fluctuates from the surface down to greater than 40 inches during the growing season which restricts most deep-rooted shrubs. Run-off is ponded or very slow and depressional areas usually accumulate local sediment instead of eroding. Severe removal of vegetation can cause channel cutting, which may cause a lowering of the water table. These deep to very deep soils are formed from local alluvium. Reactions range from neutral to moderately alkaline. The available water holding capacity (AWC) ranges from low to high and is supplemented by upward capillary movement of water from the water table. The surface is usually dark and high in organic matter. The surface textures range from fine sandy loams to clay loams.

Table 4. Representative soil features

Parent material	(1) Alluvium—volcanic and sedimentary rock (2) Residuum—volcanic and sedimentary rock
Surface texture	(1) Fine sandy loam (2) Clay loam
Family particle size	(1) Hydrous-skeletal
Drainage class	Poorly drained to moderately well drained
Permeability class	Very slow to moderately rapid
Depth to restrictive layer	60–80 in
Soil depth	60–80 in
Surface fragment cover ≤3"	0–2%
Surface fragment cover >3"	0–22%
Available water capacity (0-40in)	3.6–8.3 in
Calcium carbonate equivalent (0-40in)	0–10%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	6.1–9
Subsurface fragment volume ≤3" (4-60in)	0–44%
Subsurface fragment volume >3" (4-60in)	0–44%

Ecological dynamics

Ecological Dynamics of the Site:

The dominant visual aspect of this site is a plant community dominated by Nevada bluegrass, alpine timothy, and meadow barley. Shrubs are normally not present, however several willow species can be found in small amounts. Composition by weight is approximately 80 to 90 percent grasses and grass-like and 10 to 20 percent forbs. The soil surface of the site is typically slightly undulating causing small depressions and high spots with variable soil moisture characteristics. This site is commonly found in complex with the following sites:

1. Marsh site. Deeper depressions with water slightly above the surface. This site is dominated by Northwest territory sedge, common spikerush, broadleaf cattail, hardstem bulrush, common three square and beaked sedge.
2. Wet Meadow site. Shallow depressions with the water table at or near the surface for the entire growing season. This site is dominated by Northwest territory sedge and beaked sedge.
3. Meadow site. Slightly higher areas that are drier during the growing season. This site is dominated by tufted hairgrass, Nebraska sedge and alpine timothy.

The soils within any complex of meadow sites are highly variable. Factors that affect the determination of the site include depth to water table at end of growing season, micro-topography, and drainage class. Depth to water table and micro-topography are measurable features. Determination of drainage class requires the use of soil interpretation tables. Other interpretive factors that may be used for site determination are depth and duration of ponding frequency and the timing and duration of flooding frequency.

Micro-topography is a feature that has a dramatic effect on depth to water table and the resulting plant communities. A few inches of change in surface elevation changes species composition and/ or production. Slightly undulating

topography is common in meadow complexes, therefore, more than one site should be expected.

An infinite number of combinations of factors that influence the ecology of potential plant communities exist. For practical purposes, four plant communities where the depth to the water table drives the vegetative composition have been described. They are:

- Dry meadow Water table at >40" at end of growing season
- Meadow Water table at 20-40" at end of growing season
- Wet meadow Water table at 10-20" at end of growing season
- Marsh Water at surface to <10" at end of growing season

Most wetland species have a wide range of tolerance for variations in soil moisture. Most species occur in more than one site, although most are dominant on just one site.

The following table shows the amplitude of wetland species that occur on the four sites.

The Reference State 1, previously referred to as the Historic Climax Plant Community (HCPC), moves through many phases depending on the natural and man-made forces that impact the community over time. The Reference Plant Community of this site is dominated by Nevada bluegrass, alpine timothy, and meadow barley. State 1, described later, indicates some of these phases. The Reference Community is Plant Community 1.1. The plant species composition of the Reference Plant Community is listed later under "Reference Plant Species Composition".

During the last few thousand years, this site has evolved in an arid climate characterized by dry summers and cold, wet winters. Flooding and high water table have also influenced the development of this site. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, Rocky Mountain elk, sage grouse, lagomorphs, and small rodents.

Fire has historically occurred on the site at intervals of 20 to 40 years. Fire has had little influence on the development of the site. This site normally burns in conjunction with an adjacent upland site.

Total annual production is 1300 pounds per acre (1444 kilograms per hectare) in a normal year. Production in a favorable year is 2000 pounds per acre (2222 kg/ha). Production in an unfavorable year is 800 pounds per acre (888 kg/ha). Structurally, cool season deep-rooted perennial grasses are very dominant, followed by perennial forbs.

FUNCTION:

This site is suitable for big game and livestock grazing in the late spring, summer, and fall. Wet soils can limit grazing opportunities, particularly early in the year.

This site can be used for hiking, access to fishing, hunting, viewing wildlife and plants, and horseback riding. The wet soils can limit access. Motorized vehicles can be very detrimental to the site especially when soils are saturated to the surface.

Due to the deep soils, fertility, inherent high productivity, and relatively flat slopes, the site is fairly resistant to disturbances that can potentially degrade it. Site degradation is usually the result of lowering of the water table. This can occur with down cutting of adjacent stream channels or significant run-off following prolonged drought. This can result from on-site improper grazing or off-site conditions in the upper watershed. Once adjacent streams down-cut, concentrated flows lower the water table.

Impacts on the Plant Community.

Influence of fire:

When this site burns, it usually does not adversely affect the plant community. Most plants, including shrubs when present, sprout back with sufficient moisture and during the next growing season. Fires typically occur from mid-summer into fall.

Influence of improper grazing management:

Season-long grazing and/or excessive utilization can be very detrimental to this site. The grasses in the plant community will decline in the stand and sedges, rushes and forbs will increase. Continued improper grazing management will result in a stand of forbs and Kentucky bluegrass with sedges and rushes. This results in a reduced ability of the community to withstand seasonal flooding. Down cutting of adjacent streams can result. This down cutting will lower the water table and thus reduce the potential of the site

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.

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. Ephemeral streams commonly occur on this site. Prolonged drought may adversely affect the frequency of ephemeral streams and the plant community that relies on them. 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 precipitation. An early, hard freeze can occasionally kill some plants.

Influence of Insects and disease:

Periodic disease and insect outbreaks can affect vegetation health. Mormon crickets and grasshopper outbreaks occur periodically. Outbreaks seldom cause plant mortality since defoliation of the plant occurs only once during the year of the outbreak.

Influence of noxious and invasive plants:

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.

Influence of wildlife:

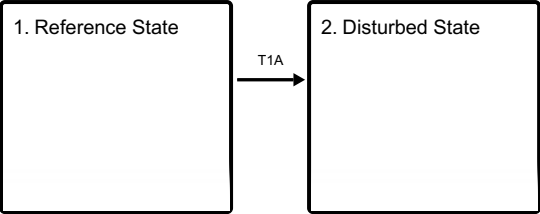
This site is important for many species of mammals for food and life cycles. The site is primarily used in the late spring, summer, and fall by big game. Many birds use the site for food, nesting or brood rearing in the late spring, summer, and fall. Sage grouse use the site for brood rearing and forage.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

Watershed:

The largest threat to degradation of this site is the lowering of the water table. Off-site conditions can affect the gradient of adjacent stream channels that can affect the water table. If the perennial grass and sedge cover is depleted or the perched water table is lost, 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. These 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.

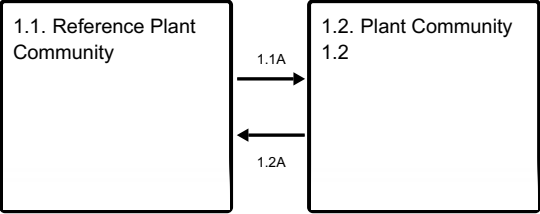
State and transition model

Ecosystem states



T1A - improper grazing management, water table lowered

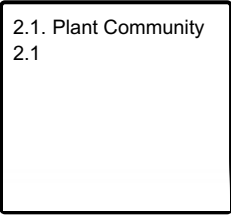
State 1 submodel, plant communities



1.1A - improper grazing management

1.2A - prescribed grazing

State 2 submodel, plant communities



State 1
Reference State

Dominant plant species

- Sandberg bluegrass (*Poa secunda*), grass
- alpine timothy (*Phleum alpinum*), grass

Community 1.1
Reference Plant Community

The Reference Plant Community (1.1) has Sandberg bluegrass (known locally as Nevada bluegrass), alpine timothy, and meadow barley in the herbaceous layer. There is a variety of perennial forbs but none comprise a high percentage of the plant community.

Resilience management. The Reference Community is Plant Community 1.1. The plant species composition of the Reference Plant Community is listed later under “Reference Plant Species Composition”. Total annual production is 1300 pounds per acre (1444 kilograms per hectare) in a normal year. Production in a favorable year is 2000 pounds per acre (2222 kg/ha). Production in an unfavorable year is 800 pounds per acre (888 kg/ha). Structurally, cool season deep-rooted perennial grasses are very dominant, followed by perennial forbs.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	680	1100	1700
Forb	120	200	300
Total	800	1300	2000

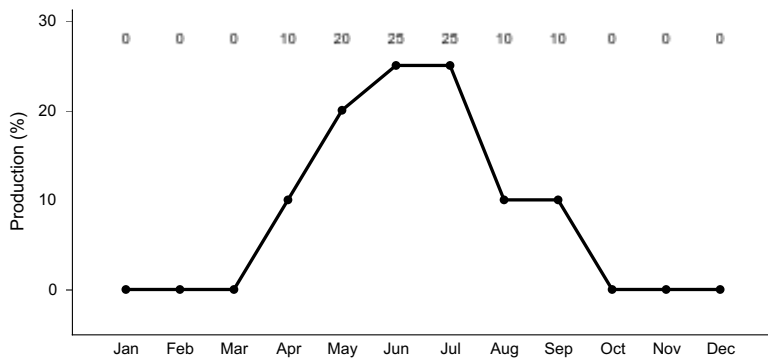


Figure 4. Plant community growth curve (percent production by month). ID0315, DRY MEADOW. State 1.

Community 1.2

Plant Community 1.2

Threadleaf Sedge/Meadow Barley/Baltic Rush/Rocky Mountain Iris/Louisiana Sagewort No lowering of the water table.

Dominant plant species

- threadleaf sedge (*Carex filifolia*), grass
- foxtail barley (*Hordeum jubatum*), grass
- mountain rush (*Juncus arcticus ssp. littoralis*), grass
- meadow barley (*Hordeum brachyantherum*), grass
- Rocky Mountain iris (*Iris missouriensis*), other herbaceous
- white sagebrush (*Artemisia ludoviciana*), other herbaceous

Pathway 1.1A

Community 1.1 to 1.2

Improper Grazing Management

Pathway 1.2A

Community 1.2 to 1.1

Prescribed Grazing

State 2

Disturbed State

Dominant plant species

- white sagebrush (*Artemisia ludoviciana*), shrub
- Kentucky bluegrass (*Poa pratensis*), grass
- foxtail barley (*Hordeum jubatum*), grass

Community 2.1

Plant Community 2.1

2.1 - Kentucky Bluegrass/ Louisiana Sagewort/Foxtail Barley This plant community is dominated by Kentucky bluegrass and Louisiana sagewort 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. Foxtail barley, bottlebrush squirreltail, and Sandberg bluegrass may have invaded or increased in the community. This state developed due to continued improper grazing management and a permanent lowering of the water table. 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 structures or bio-engineering practices, but the plant community may take many years to approach the plant community in State 1.

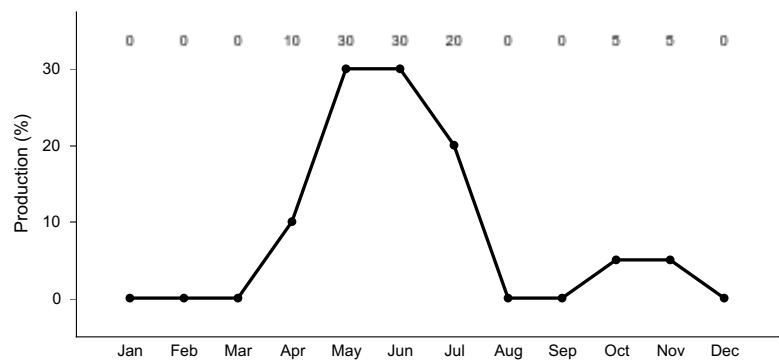


Figure 5. Plant community growth curve (percent production by month). ID0313, POPR/ARLU. State 2.

Transition T1A State 1 to 2

Improper Grazing Management, resulting in the lowering of the water table to greater than 60 inches.

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	Grass and Grass-like Species			—	
	basin wildrye	LECI4	<i>Leymus cinereus</i>	—	—
	California oatgrass	DACA3	<i>Danthonia californica</i>	—	—
	threadleaf sedge	CAFI	<i>Carex filifolia</i>	—	—
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	—	—
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	—	—
	Dudley's rush	JUDU2	<i>Juncus dudleyi</i>	—	—
	mat muhly	MURI	<i>Muhlenbergia richardsonis</i>	—	—
	meadow barley	HOB2	<i>Hordeum brachyantherum</i>	—	—
	alpine timothy	PHAL2	<i>Phleum alpinum</i>	—	—
	mountain rush	JUARL	<i>Juncus arcticus ssp. littoralis</i>	—	—
	Torrey's rush	JUTO	<i>Juncus torreyi</i>	—	—
	shortawn foxtail	ALAE	<i>Alopecurus aequalis</i>	—	—
	slenderbeak sedge	CAAT3	<i>Carex athrostachya</i>	—	—
	bluejoint	CACA4	<i>Calamagrostis canadensis</i>	—	—
	tufted hairgrass	DECE	<i>Deschampsia cespitosa</i>	—	—
	Nebraska sedge	CANE2	<i>Carex nebrascensis</i>	—	—
	fowl mannagrass	GLST	<i>Glyceria striata</i>	—	—
	woollyfruit sedge	CALA11	<i>Carex lasiocarpa</i>		

	woollyfruit sedge	CAAL11	<i>Carex lasiocarpa</i>	—	—
	Northwest Territory sedge	CAUT	<i>Carex utriculata</i>	—	—
	water sedge	CAAQ	<i>Carex aquatilis</i>	—	—
	common spikerush	ELPA3	<i>Eleocharis palustris</i>	—	—
	beaked sedge	CARO6	<i>Carex rostrata</i>	—	—
	Hood's sedge	CAHO5	<i>Carex hoodii</i>	—	—
	western inflated sedge	CAEX5	<i>Carex exsiccata</i>	—	—
	panicled bulrush	SCMI2	<i>Scirpus microcarpus</i>	—	—
	common rush	JUEF	<i>Juncus effusus</i>	—	—
	American sloughgrass	BESY	<i>Beckmannia syzigachne</i>	—	—
	broadleaf cattail	TYLA	<i>Typha latifolia</i>	—	—
	hardstem bulrush	SCAC3	<i>Schoenoplectus acutus</i>	—	—
	common threesquare	SCPU10	<i>Schoenoplectus pungens</i>	—	—
	simplestem bur-reed	SPER	<i>Sparganium erectum</i>	—	—
	softstem bulrush	SCTA2	<i>Schoenoplectus tabernaemontani</i>	—	—

Forb

2	Forbs			—	—
	foothill arnica	ARFU3	<i>Arnica fulgens</i>	—	—
	lanceleaf goldenweed	PYLA	<i>Pyrrocoma lanceolata</i>	—	—
	ballhead sandwort	ARCO5	<i>Arenaria congesta</i>	—	—
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	—	—
	common yarrow	ACMI2	<i>Achillea millefolium</i>	—	—
	mule-ears	WYAM	<i>Wyethia amplexicaulis</i>	—	—
	plantain goldenweed	PYUN2	<i>Pyrrocoma uniflora</i>	—	—
	buttercup	RANUN	<i>Ranunculus</i>	—	—
	clover	TRIFO	<i>Trifolium</i>	—	—
	slender cinquefoil	POGR9	<i>Potentilla gracilis</i>	—	—
	lambstongue ragwort	SEIN2	<i>Senecio integerrimus</i>	—	—
	aster	ASTER	<i>Aster</i>	—	—
	meadow thistle	CISC2	<i>Cirsium scariosum</i>	—	—
	western aster	SYAS3	<i>Symphyotrichum ascendens</i>	—	—
	Rocky Mountain iris	IRMI	<i>Iris missouriensis</i>	—	—
	tall ragwort	SESE2	<i>Senecio serra</i>	—	—
	Nuttall's sunflower	HENU	<i>Helianthus nuttallii</i>	—	—
	small camas	CAQU2	<i>Camassia quamash</i>	—	—
	fringed willowherb	EPCI	<i>Epilobium ciliatum</i>	—	—
	water minerslettuce	MOCH	<i>Montia chamissoi</i>	—	—
	common plantain	PLMA2	<i>Plantago major</i>	—	—
	northern water plantain	ALTR7	<i>Alisma triviale</i>	—	—
	western water hemlock	CIDO	<i>Cicuta douglasii</i>	—	—
	silverweed cinquefoil	ARAN7	<i>Argentina anserina</i>	—	—
	water speedwell	VEAN2	<i>Veronica anagallis-aquatica</i>	—	—
	short-rayed alkali aster	SYFR2	<i>Symphyotrichum frondosum</i>	—	—
	American bistort	POBI6	<i>Polygonum bistortoides</i>	—	—

	seaside arrowgrass	TRMA20	<i>Triglochin maritima</i>	–	–
	water knotweed	POAM8	<i>Polygonum amphibium</i>	–	–
	alpine leafybract aster	SYFO2	<i>Symphytotrichum foliaceum</i>	–	–
	floating pondweed	PONA4	<i>Potamogeton natans</i>	–	–
	common duckweed	LEMI3	<i>Lemna minor</i>	–	–

Animal community

Wildlife Interpretations.

Animal Community – Wildlife Interpretations

This dry meadow ecological site provides diverse habitat value for wetland and upland wildlife species. The seasonal hydrology results in abundant forage and seasonal water attracting invertebrate and vertebrate animals to these ecological sites. Important seasonal habitat is provided for over 80% of 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 the ecological site includes mule deer, pronghorn antelope and elk. Native reptiles and amphibians are reliant on these dry meadow sites throughout the year. Loss of site hydrology significantly reduces habitat value of the adjacent ecological sites. Open water is seasonal, only being provided by seasonal runoff, ponding, seasonal high water table and natural springs.

State 1 Phase 1.1 –Nevada Bluegrass/ Alpine Timothy/ Meadow Barley Reference Plant Community (RPC): The RPC provides a diversity of grasses and forbs used by native insect communities who assist in pollination of the plant community. The insects provide feed 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 this site as summer and fall brood-rearing habitat. The plant community supports summer and fall forage needs of large mammals (antelope, mule deer and elk). Limited thermal cover for ungulates is provided due to the lack of woody vegetation in the plant community. A diverse small mammal population including deer mouse, golden-mantled ground squirrels, chipmunks, yellow-bellied marmots would utilize the site on a seasonal basis.

State 1 Phase 1.2- Threadleaf Sedge/ Meadow Barley/ Baltic Rush/ Louisiana Sagewort Plant Community: This plant community is the result of improper grazing management. Insect diversity and populations would be reduced due to the plant community change and reduced vigor of forbs. Amphibian use would still occur but horizontal and vertical plant structure is reduced, and reduced insect diversity will affect key species like the northern leopard frog. This plant community provides summer and fall brood-rearing habitat for sage-grouse when sagebrush cover is nearby. The dominant plant community is preferred forage for ungulates but the improper grazing management would reduce available forage in the summer and fall. Small mammal populations and diversity would be reduced due to reduced vertical structure and increased vulnerability to predators.

State 2 –Kentucky Bluegrass/ Louisiana Sagewort/ Foxtail Barley Plant Community: This state develops due to continued improper grazing management and a permanent lowering of the water table. The reduced forb component in the plant community would support a very limited 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 for the northern leopard frog, a species of concern, would not be provided. Grassland avian species would also avoid these areas. Birds of prey (northern harrier and Cooper's hawk) may range throughout these areas looking for prey species. Ungulates will utilize the herbaceous vegetation in summer and fall. Bat populations and diversity may be reduced by the change in plant community and reduced population and diversity of insects. Small mammal populations and diversity would be reduced due to reduced vertical structure and vulnerability to predators.

Grazing Interpretations:

This site is suitable for grazing in late spring after soils have dried sufficiently to prevent trampling and in the

summer and fall. Natural water supplies are likely to be limited or absent on the site in late summer and fall. 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

Soils on this site are in hydrologic groups B, C, and D.

Recreational uses

This site has some value for aesthetics and natural beauty due to several spring and early summer blooming forbs and shrubs. Some hunting for sage grouse, rabbits, elk, and deer occurs. Hikers and fishermen may traverse the edge of the site where it is adjacent to streams.

Wood products

None

Other products

None

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

Jim Cornwell, Range Management Specialist, IASCD

Chris Hoag, Wetland Specialist, NRCS, Idaho

Dan Ogle, Plant Materials Specialist, NRCS, Idaho

Joe May, State Rangeland Management Specialist, NRCS, Idaho

Lee Brooks, Range Management Specialist, IASCD

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USDI Bureau of Land Management, US Geological Survey; USDA Natural Resources Conservation Service,

Contributors

DLF

Approval

Kirt Walstad, 12/13/2023

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)	Dave Franzen and Jacy Gibbs.
Contact for lead author	Joe May, State Range Conservationist USDA-NRCS 9173 W. Barnes Drive, Suite C Boise, ID 83709
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Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** Rills: are not common on this site. If the site is degrading due to gully down-cutting, rills may occur on the side slopes of the gully.

- 2. Presence of water flow patterns:** Water flow patterns: are common on this site. When they occur they are long, often running the length of the site and disrupted by cool season grasses. Water flow patterns are also common from run-in from the adjacent uplands.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals and/or Terracettes: are rare on this site.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground: data is not available. On sites in mid-seral status bare ground may range from 20-30 percent but more data is needed.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** Wind-Scoured, Blowouts, and/or Deposition Areas: usually not present.
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7. **Amount of litter movement (describe size and distance expected to travel):** Litter Movement: fine litter in the interspaces may move more than 6 feet or even off the site following a significant flooding or run-off event.
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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):** Soil Surface Resistance to Erosion: values should range from 4 to 6 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):** Soil Surface Loss or Degradation: Structure ranges from weak or moderate fine granular, to weak thin platy to weak medium subangular blocky. The A or A1 horizon is typically 4 to 14 inches thick. Soil organic matter (SOM) ranges from 0 to 9 percent.
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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 Composition and Distribution Relative to Infiltration: deep-rooted perennial grasses and grass-likes slow run-off and increase infiltration.
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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):** Compaction Layer: normally not present. A compaction layer can develop if grazing occurs when the soils are wet.
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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: Functional/ Structural Groups: cool season deep-rooted perennial grasses and grass-likes>>perennial forbs>shallow rooted bunchgrasses.
- Sub-dominant:
- Other:
- Additional:
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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Plant Mortality/ Decadence: most of the grasses and grass-likes on this site will become decadent in the absence of fire and ungulate grazing. Decadence or low vigor is a result of litter buildup in the crowns of the plants.
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14. **Average percent litter cover (%) and depth (in):** Litter Amount: additional litter cover data is needed but is expected to be 35 to 50 percent to a depth of 0.2 inches. Under mature shrubs and basin wildrye, litter is >0.5 inches deep and is 90-100 percent ground cover.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual Production: is 1300 pounds per acre (1444 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 80-90 percent of the total production and forbs 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:** Invasive Plants: include cheatgrass, leafy spurge, whitetop, perennial pepperweed, rush skeletonweed, Canada, musk and scotch thistle and diffuse and spotted knapweed.
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17. **Perennial plant reproductive capability:** Reproductive Capability of Perennial Plants: all functional groups have the potential to reproduce in most years.
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