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FINAL REPORT
BELLE FOURCHE RIVER WATERSHED STUDY
BASIN WIDE WATERSHED MANAGEMENT PLAN

Topical Report RSI-2501
Volume 2

prepared for

Wyoming Water Development District
6920 Yellowtail Road
Cheyenne, Wyoming 82002

March 2015

RESPEC

APPENDIX A

PREDOMINANT ECOLOGICAL SITE DESCRIPTIONS

ESD1_Loamy (Ly) 10–14-Inch Northern Plains Precipitation Zone_ R058BY122WY

ESD2_Loamy (Ly) 15–19-Inch Black Hills Precipitation Zone_ R061XY122WY

ESD3_Shallow Loamy (SwLy) 15–19-Inch Precipitation Zone Black Hills_R061XY162WY

ESD4_Loamy (Ly) 15–17-Inch Northern Plains Precipitation Zone _ R058BY222WY

ESD5_Sandy (Sy) 10–14-Inch Northern Plains Precipitation Zone_ R058BY150WY

United States Department of Agriculture Natural Resources Conservation Service Ecological Site Description

Section I: Ecological Site Characteristics

Ecological Site Identification and Concept

Site name: Loamy (Ly) 10-14" Northern Plains Precipitation Zone

Site type: Rangeland

Site ID: R058BY122WY

Major land resource area (MLRA): 050B-Northern Rolling High Plains, Southern Part

[Return to Section I Ecological Site Descriptions](#)



Physiographic Features

This site occurs on gently undulating rolling land.

Landform: (1) Hill
(2) Alluvial fan
(3) Ridge

	<u>Minimum</u>	<u>Maximum</u>
<i>Elevation (feet):</i>	3800	5100
<i>Slope (percent):</i>	0	30
<i>Flooding</i>		
<i>Frequency:</i>	None	None
<i>Ponding</i>		
<i>Depth (inches):</i>	0	0
<i>Frequency:</i>	None	None
<i>Runoff class:</i>	Negligible	High
<i>Aspect:</i>	No Influence on this site	

Climatic Features

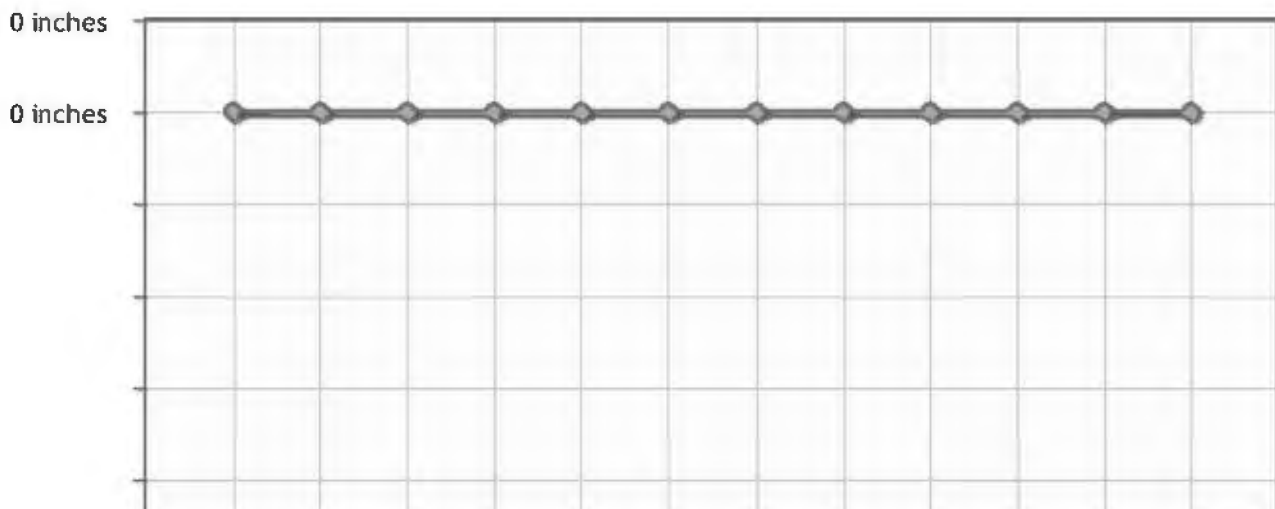
Annual precipitation ranges from 10-14 inches per year. Wide fluctuations may occur in yearly precipitation and result in more drought years than those with more than normal

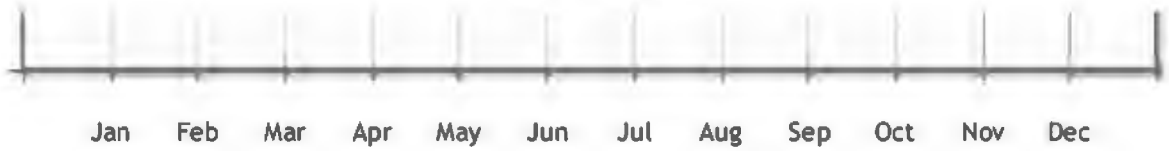
precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks from Canada in winter move rapidly from northwest to southeast 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. Wind speed averages about 8 mph, ranging from 10 mph during the spring to 7 mph during late summer. 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 1 and continues to about July 1. Native warm season plants begin growth about May 15 and continue to about August 15. Green up of cool season plants may occur in September and October of most years. The following information is from the "Clearmont 5 SW" climate station: Frost-free period (32 F): 76 - 132 days; (5 yrs. out of 10, these days will occur between May 30 – September 11) Freeze-free period (28 F): 110 - 145 days; (5 yrs. out of 10, these days will occur between May 16 – September 21) Mean annual precipitation: 12.4 inches Mean annual air temperature: 43.2 F (28.4 F Avg. Min. – 57.9 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: "Dull Center"

	<u>Averaged</u>
<i>Frost-free period (days):</i>	104
<i>Freeze-free period (days):</i>	127
<i>Mean annual precipitation (inches):</i>	14.00

Monthly Precipitation (Inches):

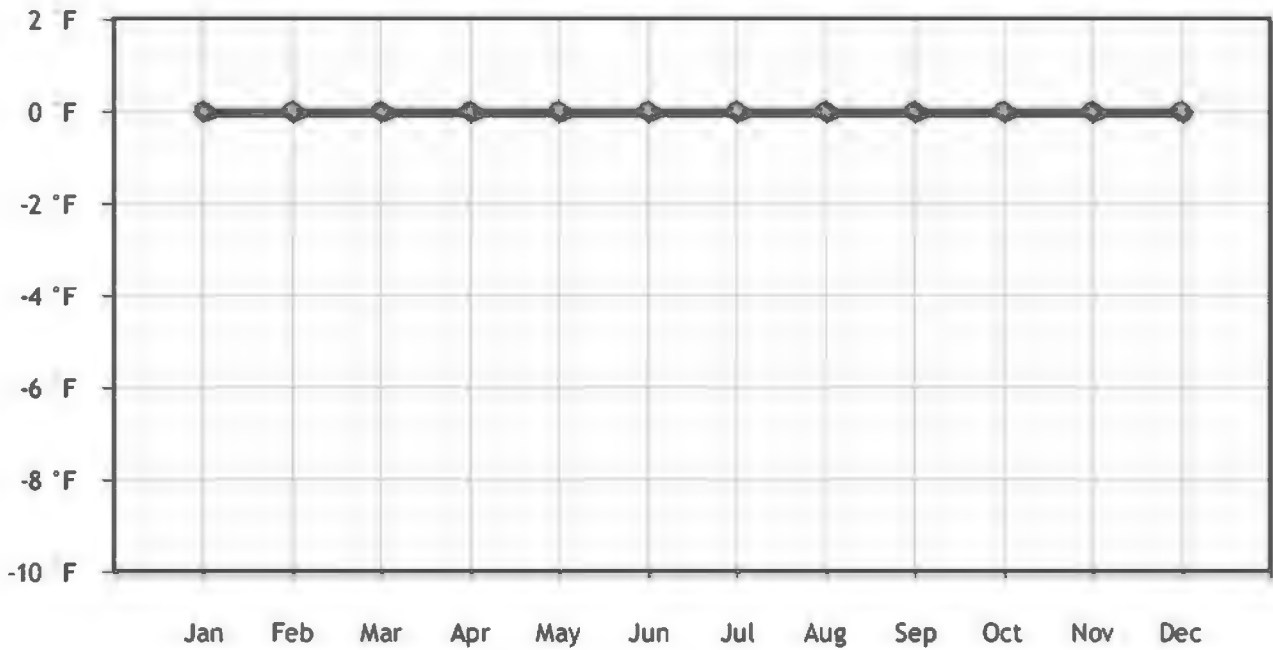
	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Low</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00





Monthly Temperature (°F):

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Low</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Influencing Water Features

Stream Type: None

Representative Soil Features

The soils of this site are deep to moderately deep (greater than 20" to bedrock), well drained & moderately permeable. Layers of the soil most influential to the plant community varies from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam or clay loam texture.

Major Soil Series correlated to this site includes: Bidman, Cambria, Cushman, Forkwood, Kishona, Parmleed, Theedle and Zigweid.

Other Soil Series correlated to this site in MLRA 58B include: Absted, Arvada, Ascalon, Big Horn, Bowbac, Briggsdale, Cambria Variant, Cedak Dry, Clarkelen, Connerton, Docpar, El Rancho, Emigha, Emigrant, Forkwood Variant, Fort Collins, Garrett, Glendo, Harlan, Harlan Dry, Haverdad, Hiland, Jonpol, Kadoka, Keota, Keyner, Kim, Kirtley, Larim, Larimer, Lawver, Lohsman, Maysdorf, Neville, Noden, Nuncho, Platmak, Platmak Dry, Pugsley, Recluse, Recluse Dry, Redbow, Reddale, Renohill, Roughlock, Senlar, Spearman, Stoneham, Teckla, Thirtynine, Ulm, Ulm Dry, Wages, Wolf, Wolf Variant, Wolf Dry, and Wyotite.

Surface texture: (1) Loam
(2) Gravelly Sandy loam
(3) Cobbly Very fine sandy loam

Subsurface texture group: Loamy

	<u>Minimum</u>	<u>Maximum</u>
<i>Surface fragments <=3" (% cover):</i>	0	0
<i>Surface fragments >3" (% cover):</i>	0	10
<i>Subsurface fragments <=3" (% volume):</i>	0	15
<i>Subsurface fragments >3" (% volume):</i>	0	10

Drainage class: Moderately well drained to well drained

Permeability class: Moderately slow to moderate

	<u>Minimum</u>	<u>Maximum</u>
<i>Depth (inches):</i>	20	60
<i>Available water capacity (inches):</i>	3.00	6.30
<i>Electrical conductivity (mmhos/cm):</i>	0	4
<i>Sodium adsorption ratio:</i>	0	5
<i>Calcium carbonate equivalent (percent):</i>	0	10

Plant Communities

Ecological Dynamics of the Site

As this site deteriorates because of a combination of frequent and severe grazing, species such as blue grama and big sagebrush will increase. Cool-season grasses such as green needlegrass, needleandthread, and rhizomatous wheatgrasses will decrease in frequency and production.

Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

Due to the amount and pattern of the precipitation, the big sagebrush component typically is not resilient once it has been removed if a healthy and vigorous stand of grass exists and is maintained. The exception to this is where the herbaceous component is severely degraded at the time of treatment, growing conditions are unfavorable after treatment, and/or recovery periods are inadequate.

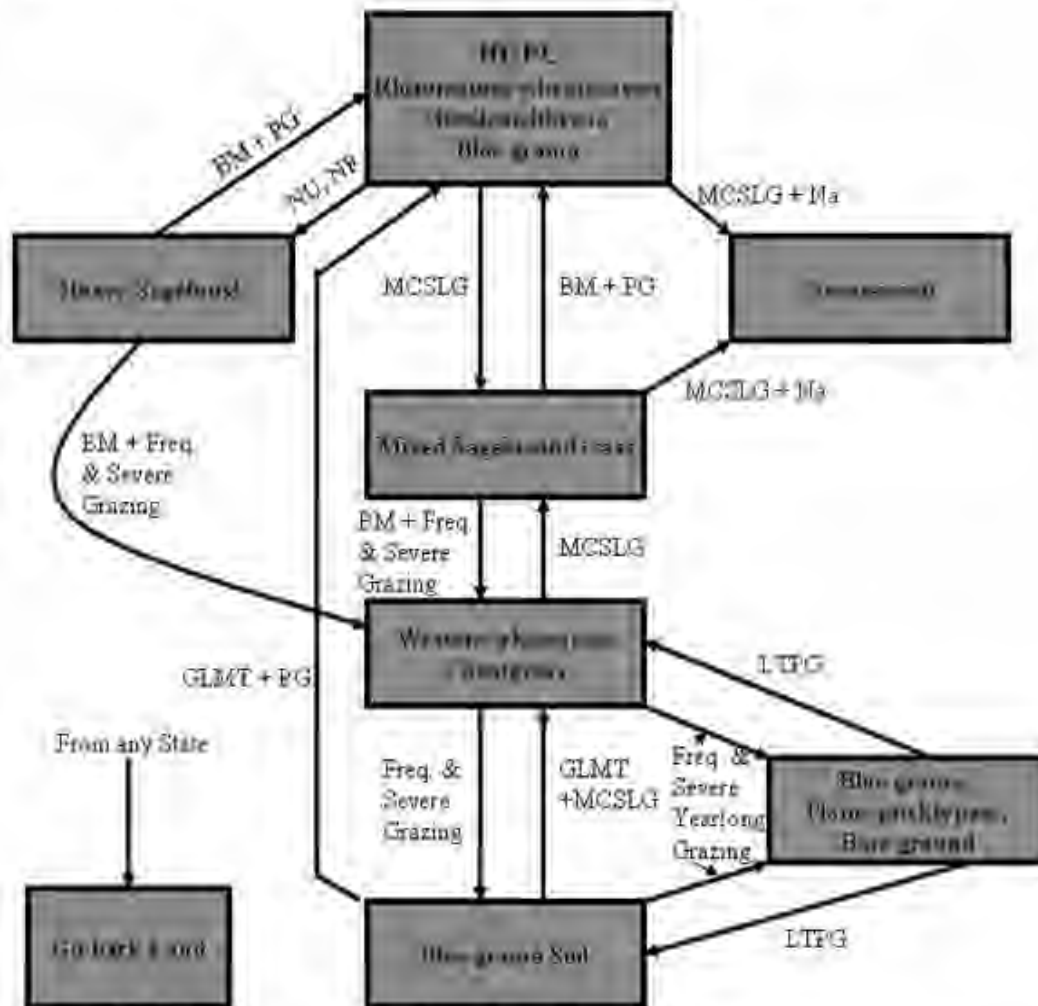
The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical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

Site Type: Rangeland
MLRA: 35B - Northern Rolling High Plains

Locality: 10-14° P.E.
R058BY122WY



BM - Brush Management (fire, chemical, mechanical)
 Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool season Mid-grasses during the Growing Season
 GLMT - Grazing Land Mechanical Treatment
 LTPG - Long-term Prescribed Grazing
 MCSLG - Moderate, Continuous Season-long Grazing
 NU, NF - No Use and No Fire
 PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)
 VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)
 Na - found adjacent to a saline site

Technical Guide
Section III

4

USDA-NRCS
Rev. 02-17-01

Rhizomatous wheatgrasses/Needleandthread/Blue Grama Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning,

and sometimes on areas receiving occasional short periods of rest. The potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% woody plants. This state is dominated by cool season mid-grasses.

The major grasses include western wheatgrass, needleandthread, and green needlegrass. Other grasses occurring in this state include Cusick's and Sandberg's bluegrass, bluebunch wheatgrass, and blue grama. A variety of forbs and half-shrubs also occur, as shown in the preceding table. Big sagebrush is a conspicuous element of this state, occurs in a mosaic pattern, and makes up 5 to 10% of the annual production. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 1,200 lbs./acre, but it can range from about 700 lbs./acre in unfavorable years to about 1,500 lbs./acre in above average years.

This plant community is extremely stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity).

Transitions or pathways leading to other plant communities are as follows:

- No use and no fire for 20 years or more will convert this plant community to the Heavy Sagebrush Plant Community.
- Moderate, continuous season-long grazing will convert the plant community to the Mixed Sagebrush/Grass Plant Community.
- Moderate continuous season-long grazing, where greasewood occurs adjacent to the site, will convert the plant community to the Greasewood Plant Community.
- When cropped annually and then abandoned without reseeding, the site is converted to the Go-back Land Plant Community.

Rhizomatous wheatgrasses/Needleandthread/Blue Grama Plant Community Plant Species Composition

Grass/Grasslike				Annual Production (pounds per acre)	
<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
1	streambank wheatgrass, thickspike wheatgrass	ELLAL	<i><u>Elymus lanceolatus ssp. lanceolatus</u></i>	175	375
	western wheatgrass	PASM	<i><u>Pascopyrum smithii</u></i>	175	375
2	green needlegrass	NAVI4	<i><u>Nassella viridula</u></i>	105	225

3				175	375
	needle and thread, needleandthread	HECO26	<u>Hesperostipa comata</u>	175	375
4				70	150
	Cusick's bluegrass, Cusick bluegrass	POCU3	<u>Poa cusickii</u>	70	150
5				105	225
	blue grama	BOGR2	<u>Bouteloua gracilis</u>	105	225
6				175	375
	Indian ricegrass	ACHY	<u>Achnatherum hymenoides</u>	35	75
	hairy grama	BOHI2	<u>Bouteloua hirsuta</u>	35	75
	needleleaf sedge	CADU6	<u>Carex duriuscula</u>	35	75
	threadleaf sedge	CAFI	<u>Carex filifolia</u>	35	75
	plains reedgrass	CAMO	<u>Calamagrostis montanensis</u>	35	75
	prairie Junegrass	KOMA	<u>Koeleria macrantha</u>	35	75
	Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	POSE	<u>Poa secunda</u>	35	75
	bluebunch wheatgrass	PSSP6	<u>Pseudoroegneria spicata</u>	35	75

Forb**Annual Production
(pounds per acre)**

<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
7				105	225
	yarrow	ACHIL	<u>Achillea</u>	35	75
	textile onion	ALTE	<u>Allium textile</u>	35	75
	rosy pussytoes, rose pussytoes	ANRO2	<u>Antennaria rosea</u>	35	75
	aster	ASTER	<u>Aster</u>	35	75
	milkvetch	ASTRA	<u>Astragalus</u>	35	75
	tapertip hawksbeard	CRAC2	<u>Crepis acuminata</u>	35	75
	white prairie clover	DACA7	<u>Dalea candida</u>	35	75
	violet prairie clover, purple prairie clover	DAPU5	<u>Dalea purpurea</u>	35	75
	sulphur-flower buckwheat	ERUM	<u>Eriogonum umbellatum</u>	35	75
	scarlet beeblossom, scarlet gaura	GACO5	<u>Gaura coccinea</u>	35	75
	stemless mock goldenweed	HAAC	<u>Haplopappus acaulis(syn)</u>	35	75
	desertparsley, biscuitroot	LOMAT	<u>Lomatium</u>	35	75
	bluebells	MERTE	<u>Mertensia</u>	35	75
	large Indian breadroot, breadroot	PEES	<u>Pediomelum</u>	35	75

scurpees

esculentumupright prairie
coneflower, prairie
coneflower

RAC03

Ratibida columnifera

35

75

American vetch

VIAM

Vicia americana

35

75

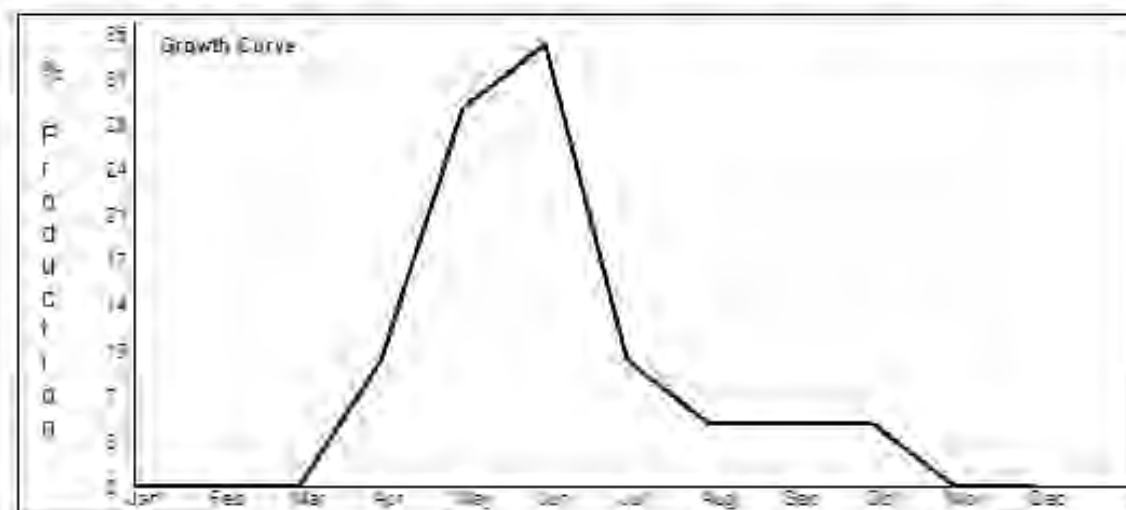
Shrub/Vine

Annual Production
(ounds per acre)

<u>Group</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
<u>Group Name</u>					
8	big sagebrush	ARTR2	<u>Artemisia tridentata</u>	70	150
9	winterfat	KRLA2	<u>Koeleria cristata</u>	35	75

Plant Growth CurveGrowth curve
number: WY1401Growth curve
name: 10-14NP upland sitesGrowth curve
description:Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	30	35	10	5	5	5	0	0



Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. Wyoming big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority of the understory with the balance made up of short warm-season grasses, annual cool-season grasses, and miscellaneous forbs.

Dominant grasses include needleandthread, western wheatgrass, and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs commonly found in this plant community include plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Production of cool-season grasses, particularly green needlegrass, has been reduced. The sagebrush canopy protects the cool-season mid-grasses, but this protection makes them unavailable for grazing. Cheatgrass (downy brome) has invaded the site. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

The total annual production (air-dry weight) of this state is about 900 pounds per acre, but it can range from about 700 lbs./acre in unfavorable years to about 1,200 lbs./acre in above average years.

This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

Transitions or pathways leading to other plant communities are as follows:

- Brush management (chemical, fire, or mechanical), followed by prescribed grazing, will convert this plant community to the Rhizomatous wheatgrasses, Needleandthread, Blue grama Plant Community. The probability of this occurring is high. When prescribed fire is used, sufficient fine fuels will need to be present. This may require deferment from grazing prior to treatment. Post management is critical to ensure success. This can range from two or more years of rest to partial growing season deferment, depending on the condition of the understory at the time of treatment and the growing conditions following treatment. In the case of an intense wildfire that occurs when desirable plants are not completely dormant, the length of time required to reach the Rhizomatous wheatgrasses, Needleandthread, Blue grama Plant Community may be increased.
- Brush management, followed by frequent and severe grazing, will convert the plant

community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high. If bare areas exist after treatment, along with no recovery periods from grazing, cheatgrass will invade and plants not as resistant to grazing as western wheatgrass will be reduced.

- Moderate continuous season-long grazing, where greasewood occurs adjacent to this state, will convert the plant community to the Greasewood Plant Community.

Plant Growth Curve

Growth curve number: WY1401
Growth curve name: 10-14NP upland sites
Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	30	35	10	5	5	5	0	0



Heavy Sagebrush Plant Community

This plant community is the result of long-term protection from grazing and fire. Sagebrush eventually dominates this plant community with canopy cover often exceeding 60%. At first, excessive litter builds up, shading out some of the grasses and forbs. Other plants become decadent with low vigor. Bunch grasses often develop dead centers. Eventually, the interspaces between plants increase in size leaving more soil surface exposed. Organic matter oxidizes in the air rather than being incorporated into the soil.

The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community. Weedy species, cool-season grasses, and sedges have increased. Blue grama has decreased. Rodent activity has resulted in an increase in soil disturbance. Cactus and sageworts often increase. Noxious weeds such as Dalmatian toadflax, leafy spurge, or Canada thistle may invade the site if a seed source is present. Plant diversity is moderate to high.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 600 lbs./acre in unfavorable years to about 1,000 lbs./acre in above average years.

This plant community is not resistant to change and is more vulnerable to severe disturbance than the HCPC. The introduction of grazing or fire quickly changes the plant community.

Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestaling are obvious. Infiltration is reduced and runoff is increased.

Transitions or pathways leading to other plant communities are as follows:

- Brush management, followed by prescribed grazing, will return this plant community to at or near the Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community.
- Brush management, followed by frequent and severe grazing, will convert the plant community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high because of the amount of bare ground exposed to cheatgrass invasion.

Plant Growth Curve

Growth curve number: WY1401

Growth curve name: 10-14NP upland sites

Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	30	35	10	5	5	5	0	0



Western Wheatgrass/Cheatgrass Plant Community

This plant community is created when the Mixed Sagebrush/Grass Plant Community or the Heavy Sagebrush Plant Community is subjected to fire or brush management not followed by prescribed grazing. Rhizomatous wheatgrasses and annuals will eventually dominate the site.

Compared to the HCPC, cheatgrass has invaded with western wheatgrass and thickspike wheatgrass maintaining at a similar or slightly higher level. Virtually all other cool-season mid-grasses are severely decreased. Blue grama is the same or slightly less than found in the HCPC. Plant diversity is low.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 450 lbs./acre in unfavorable years to about 750 lbs./acre in above average years.

This plant community is relatively stable with the rhizomatous wheatgrasses being somewhat resistant to overgrazing and the cheatgrass effectively competing against the establishment of perennial cool-season grasses.

An increase in bare ground reduces water infiltration and increases soil erosion. The watershed is usually functioning. The biotic integrity is reduced by the lack of diversity in the plant community.

Transitions or pathways leading to other plant communities are as follows:

- Moderate continuous season-long grazing will eventually return this plant community to the Mixed Sagebrush/Grass Plant Community.
- Frequent and severe grazing will convert this plant community to Blue Grama Sod Plant Community.
- Frequent and severe yearlong grazing will convert this plant community to Blue grama, Plains Frickdypcar, Bare Ground Plant Community.

- Long-term, prescribed grazing will eventually return this plant community to at or near the Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community.

Plant Growth Curve

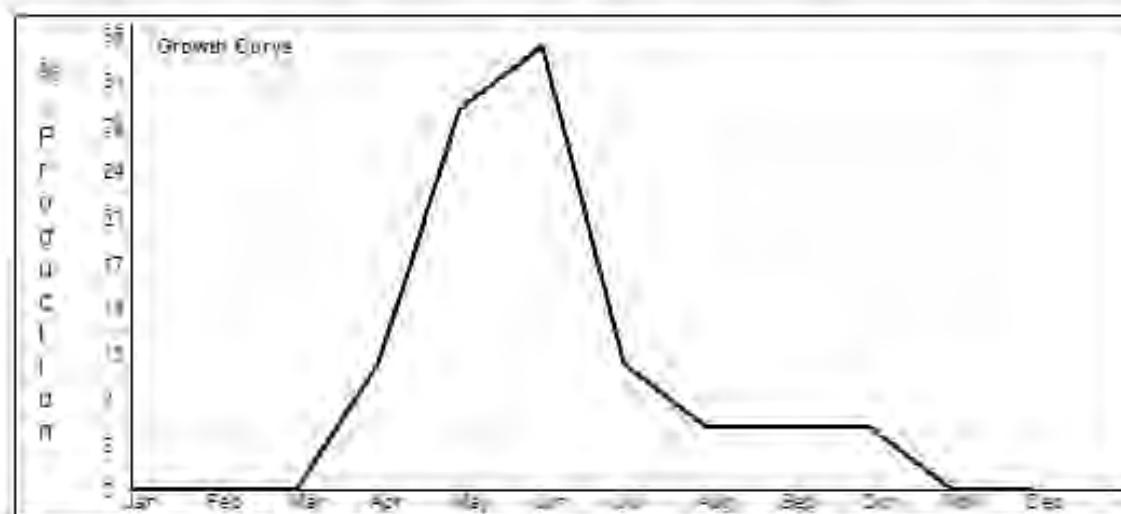
Growth curve number: WY1401

Growth curve name: 10-14NP upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	30	35	10	5	5	5	0	0



Blue Grama Sod Plant Community

This plant community is the result of frequent and severe grazing during the growing season of the cool-season mid-grasses. A dense sod of blue grama dominates it. Pricklypear cactus can become dense enough so that livestock cannot graze forage growing within the cactus clumps.

When compared to the Historic Climax Plant Community, blue grama and threadleaf sedge have increased. All cool-season mid-grasses and forbs have been greatly reduced. Plant diversity is extremely low.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 450 lbs./acre in unfavorable years to about 750 lbs./acre in above average years.

This sod bound plant community is very resistant to water infiltration. While this sod protects the site itself, off-site areas are affected by excessive runoff that can cause gully erosion. This sod is very resistant to change and may require a grazing land mechanical treatment, such as chiseling, to return the cool-season grass component.

Transitions or pathways leading to other plant communities are as follows:

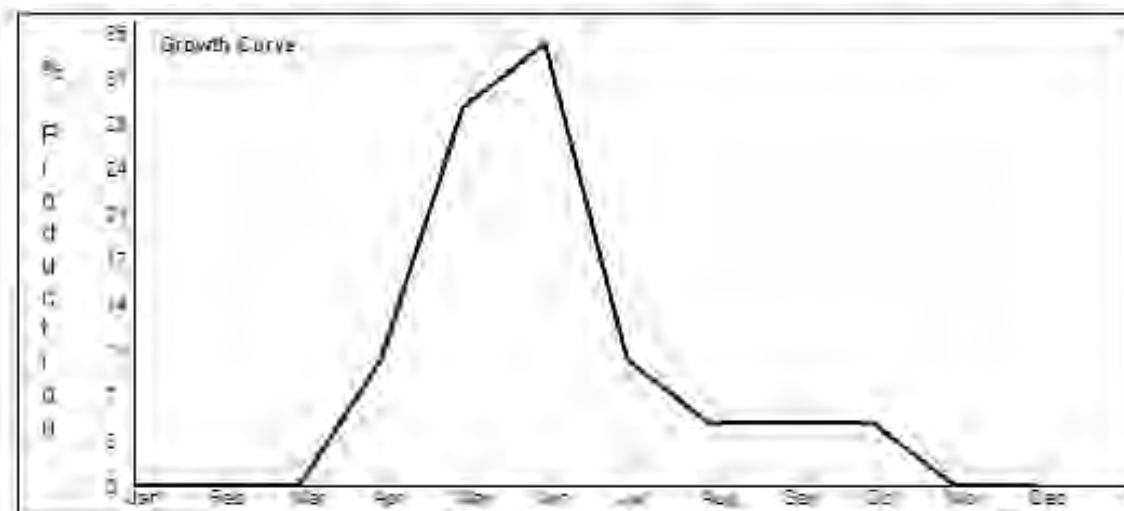
- Grazing land mechanical treatment (chiseling, etc.) and pricklypear cactus control (if needed), followed by prescribed grazing, will return this plant community to near Historic Climax Plant Community condition.
- Grazing land mechanical treatment, followed by moderate continuous season-long grazing, will convert this plant community to the Western Wheatgrass/Cheatgrass Plant Community.
- Frequent and severe yearlong grazing will eventually convert this state to the Blue Grama, Plains Pricklypear, Bare Ground Plant Community.

Plant Growth Curve

Growth curve number: WY1401
 Growth curve name: 10-14NP upland sites
 Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	30	35	10	5	5	5	0	0



Greasewood Plant Community

This plant community can occur where states are subjected to continuous season-long grazing at moderate stocking rates and where greasewood occurs adjacent to the site. It is dominated by an overstory of greasewood and possibly big sagebrush. Rhizomatous wheatgrasses, cheatgrass, and inland saltgrass make up the understory. Salts in the surface will increase due to the shedding of the salt-filled leaves of the greasewood. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 700 pounds per acre, but it can range from about 525 lbs./acre in unfavorable years to about 875 lbs./acre in above average years.

This plant community is resistant to change. A significant reduction of greasewood can only be accomplished through repeated brush control treatments. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

The site is protected from erosion as long as ground cover is maintained. The biotic integrity of this state is somewhat intact because of the woody overstory and perennial grass understory. The watershed is functioning as long as a grass cover is maintained.

- Recovery to near Historic Climax Plant Community condition is difficult due to the resistance of greasewood to herbicides and accumulated effects of salts on the soil.

Plant Growth Curve

Growth curve number: WY1401

Growth curve name: 10-14NP upland sites

Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	30	35	10	5	5	5	0	0



Blue Grama Sod/Plains Pricklypear/Bare Ground Plant Community

This plant community is the result of frequent and severe yearlong grazing over the long-term. Perennial plants are decreased. Cheatgrass, annual weeds, and bare ground are increased. Plains pricklypear may have increased, rendering much of the forage unusable by livestock.

This plant community is highly variable depending on the severity, frequency, and duration of the grazing and also the condition of the plant community when this level of grazing began. Virtually all plants not resistant to overgrazing may have been eliminated. Dominant plants may include blue grama, threeawns, annuals, and, to a lesser degree, rhizomatous wheatgrasses. Perennial plant diversity is low.

The total annual production (air-dry weight) of this state is about 500 pounds per acre, but it can range from about 375 lbs./acre in unfavorable years to about 625 lbs./acre in above average years.

This state is unhealthy and subject to increased erosion. Runoff is high on this state due to the sod nature of blue grama and bare ground.

Transitions or pathways leading to other plant communities are as follows:

- Long-term prescribed grazing will convert this plant community initially to the Blue Grama Sod Plant Community, when this state is dominated by blue grama sod at the time of treatment.
- Long-term prescribed grazing will convert this plant community to the Western Wheatgrass /Cheatgrass Plant Community, when this state has large amounts of cheatgrass, annual weeds, and bare ground at the time of treatment. Control of plains pricklypear cactus may be necessary.

Reseeding areas with native plant species and proper grazing management may be necessary to accelerate recovery where few desirable plants remain.

Plant Growth Curve

Growth curve number: WY1401

Growth curve name: 10-14NP upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	30	35	10	5	5	5	0	0



Go-back Land

This plant community occurs on land that has been cropped annually in the past and then abandoned without reseeding. Natural succession has resulted in a plant community dominated by varying combinations of red threeawn, cheatgrass, blue grama, Sandberg bluegrass, and some rhizomatous wheatgrasses. Forage production is low and grasses such as red threeawn and cheatgrass are not used efficiently by livestock.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 500 lbs./acre in unfavorable years to about 900 lbs./acre in above average years.

The potential for accelerated erosion can be highly variable depending on amount of bare ground present. Biological diversity is low.

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing may be used to increase desirable native cool-season grass production. It is usually difficult to return to near Historic Climax Plant Community condition in a timely manner because of past soil loss.
- Grazing land mechanical treatment (i.e., chiseling) may improve forage production where significant rhizomatous wheatgrass is present to respond.

Where there is a lack of perennial grasses, reseeding to tame or native species may be necessary to return these lands to production in the form of pastureland. These pastures are normally seeded to crested wheatgrass, pubescent wheatgrass, or Russian wildrye. They require considerable investment to establish and have a variable life expectancy. They do produce up to 50% more than native range, but their value as forage is somewhat limited due to the single species usually seeded. In some cases, the single species or certain groups of species (e.g., wheatgrasses) may be more vulnerable to infestation by associated insects and/or diseases (e.g., black grass bugs).

Plant Growth Curve

Growth curve number: WY1401
Growth curve name: 10-14NP upland sites
Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	30	35	10	5	5	5	0	0



Section II: Ecological Site Interpretations

Animal Community

Animal Community – Wildlife Interpretations

Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community (HCPC): 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. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Mixed Sagebrush/Grass Plant Community: The combination of an overstory of sagebrush and an understory of grasses and forbs provide a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows' nest in big sagebrush plants, and hosts of other nesting birds utilize stands in the 20-30% cover range.

Heavy Sagebrush Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community provides excellent escape and thermal cover for large ungulates, as well as nesting and brood rearing habitat for sage grouse.

Western Wheatgrass/Cheatgrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

Blue Grama Sod and Go-back Land Plant Communities: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Western Wheatgrass/Cheatgrass Plant Community is limiting. Generally, these are not target plant communities for wildlife habitat management.

Greasewood Plant Community: This plant community exhibits a low level of plant species diversity due to the accumulation of salts in the soil. It may provide some thermal and escape cover for deer and antelope if no other woody community is nearby, but in most

cases it is not a desirable plant community to select as a wildlife habitat management objective.

Blue Grama, Plains Pricklypear, Bare Ground Plant Community: Benefits to other wildlife are largely due to the subterranean structure created by the prairie dogs, not the sparse vegetation found on this plant community.

Introduced Pasture: These communities are highly variable depending on the species planted. Refer to Forage Suitability Groups for more information.

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)	
Rhizomatous WG, Needleandthread, Blue Grama	700-1500 .4
Heavy Sagebrush	800-1400 .3
Blue Grama Sod	400-1000 .2
Mixed Sagebrush/Grass	700-1200 .33
Western Wheatgrass/Cheatgrass	600-1200 .2
Blue grama, Plains Pricklypear, Bare ground	300-800 .1
Greasewood	525-875 .3
Go-back Land	500-900 .2

* - 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.

Plant Preference by Animal Kind

Animal kind: All antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
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yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Achnatherum</u>														
Indian ricegrass	<u>hymenoides</u>	Leaves	N	N	N	P	P	P	N	N	N	D	D	D	
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u>Andropogon gerardii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
sand bluestem	<u>Andropogon hallii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u>Artemisia cana</u>	Leaves	P	P	P	P	P	P	P	P	P	P	P	P	P
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	P	P	P	P	P	P	P	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
sideoats grama	<u>Bouteloua curtipendula</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
blue grama	<u>Bouteloua gracilis</u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u>Bouteloua hirsuta</u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Buchloe</u>														
buffalograss	<u>dactyloides(syn)</u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint	<u>Calamagrostis</u>														
reedgrass	<u>canadensis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
needleleaf sedge	<u>Carex duriuscula</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u>Carex filifolia</u>	Leaves	P	P	P	P	P	P	P	P	P	P	P	P	P
inland sedge	<u>Carex interior</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Calamagrostis</u>														
plains reedgrass	<u>montanensis</u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
yellow															

rabbitbrush, green																				
rabbitbrush, low																				
rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
white prairie clover	<u>Dalea candida</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple prairie clover	<u>Dalea purpurea</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	<u>Deschampsia</u>																			
tufted hairgrass	<u>caespitosa(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
bearded wheatgrass	<u>Elymus caninus</u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u>Elymus canadensis</u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u>Gaura coccinea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread,																				

needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia lanata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u><i>Mertensia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
plains muhly, stoneyhills muhly	<u><i>Muhlenbergia cuspidata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
green needlegrass	<u><i>Nassella viridula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u><i>Pascopyrum smithii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot scurfpea	<u><i>Pediomelum esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u><i>Pinus ponderosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u><i>Poa canbyi(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u><i>Poa cusickii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u><i>Populus deltoides ssp. monilifera</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u><i>Poa secunda</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u><i>Poa secunda ssp. juncifolia(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
bluebunch wheatgrass	<u><i>Pseudoroegneria spicata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
upright prairie coneflower,																				

prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
willow	<u>Salix</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u>Andropogon gerardii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

sand bluestem	<u><i>Andropogon hallii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
aster	<u><i>Aster</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sideoats grama	<u><i>Bouteloua curtipendula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u><i>Bouteloua hirsuta</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u><i>Calamagrostis canadensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
needleleaf sedge	<u><i>Carex duriuscula</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u><i>Carex filifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u><i>Carex interior</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock tapertip	<u><i>Conium maculatum</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

hawksbeard	<u>Crepis acuminata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
white prairie clover	<u>Dalea candida</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple prairie clover	<u>Dalea purpurea</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
	<u>Deschampsia caespitosa(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
inland saltgrass		Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
bearded wheatgrass	<u>Elymus caninus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u>Gaura coccinea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Krascheninnikovia lanata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
winterfat		Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u>Leymus cinereus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P

desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	D D D D D D D D D D D D D
bluebells	<u>Mertensia</u>	Entire plant	D D D D D D D D D D D D D
plains muhly, stonehills muhly	<u>Muhlenbergia cuspidata</u>	Entire plant	D D D D D D D D D D D D D
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U U U U U U U U U U U U U
green needlegrass	<u>Nassella viridula</u>	Entire plant	P P P P P P P P P P P P P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D D D D D D D D D D D D D
large Indian breadroot, breadroot	<u>Pediomelum esculentum</u>	Entire plant	D D D D D D D D D D D D D
scurfpea	<u>Pinus ponderosa</u>	Entire plant	U U U U U U U U U U U U U
ponderosa pine			
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P P P P P P P P P P P P P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P P P P P P P P P P P P P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D D D D D D D D D D D D D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D D

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u> <u>E</u> <u>M</u> <u>A</u> <u>M</u> <u>J</u> <u>J</u> <u>A</u> <u>S</u> <u>O</u> <u>N</u> <u>D</u>
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	D D D D D D D D D D D D D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u> <u>E</u> <u>M</u> <u>A</u> <u>M</u> <u>J</u> <u>J</u> <u>A</u> <u>S</u> <u>O</u> <u>N</u> <u>D</u>
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P P P P P P P P P P P P P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P P P P P P P P P P P P P
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	D D D D D D D D D D D D D
skunkbush			

sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
alkali cordgrass	<u>Spartina gracilis</u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u>Andropogon gerardii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sand bluestem	<u>Andropogon hallii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Wyoming big sagebrush	<u>Artemisia tridentata ssp. wyomingensis</u>	Entire plant	P	P	P	P	P	P	D	D	D	D	D	D
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sideoats grama	<u>Bouteloua curtipendula</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u>Bouteloua hirsuta</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u>Buchloe dactyloides(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u>Calamagrostis canadensis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needleleaf sedge	<u>Carex duriuscula</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u>Carex interior</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
white prairie clover	<u>Dalea candida</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

violet prairie clover, purple prairie clover	<u>Dalea purpurea</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass bearded wheatgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Canada wildrye	<u>Elymus caninus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
silverberry	<u>Elymus canadensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
squirreltail, bottlebrush squirreltail	<u>Elaeagnus commutata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
slender wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u>Elymus trachycaulus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rubber rabbitbrush	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u>Ericameria nauseosa</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
scarlet beeblossom, scarlet gaura	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Gaura coccinea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
iris	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Baltic rush	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u>Juncus balticus(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Juniperus scopulorum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
basin wildrye	<u>Krascheninnikovia lanata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u>Leymus cinereus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u>Lomatium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Mertensia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

plains muhly, stoneyhills muhly	<u>Muhlenbergia cuspidata</u>	Entire plant	U U U U U U U U U U U U
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U U U U U U U U U U U U
green needlegrass	<u>Nassella viridula</u>	Entire plant	P P P P P P P P P P P P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D D D D D D D D D D D D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D D D D D D D D D D D D
ponderosa pine	<u>Pinus ponderosa</u>	Entire plant	U U U U U U U U U U U U
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P P P P P P P P P P P P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P P P P P P P P P P P P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D D D D D D D D D D D D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	P P P P P P P P P P P P
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	D D D D D D D D D D D D
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P P P P P P P P P P P P
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	P P P P P P P P P P P P
prairie coneflower	<u>Ratibida</u>	Entire plant	D D D P P P D D D D D D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D D D D D D D D D D D D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D D D D D D D D D D D D
willow	<u>Salix</u>	Entire plant	P P P P P P P P P P P P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D D D D D D D D D D D D
	<u>Schizachyrium</u>		

little bluestem	<u>scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Sporobolus</u>														
sand dropseed	<u>cryptandrus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Thermopsis</u>														
prairie thermopsis	<u>rhubifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Achnatherum</u>													
Indian ricegrass	<u>hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u>Andropogon gerardii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand bluestem	<u>Andropogon hallii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Artemisia cana ssp. cana</u>													
silver sagebrush	<u>cana</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green														
sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	U	U	U	N	N	N	N	N	N	U	U	U
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	D	D	D	U	U	U	U	U	U	D	D	D
sideoats grama	<u><i>Bouteloua curtipendula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u><i>Bouteloua hirsuta</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u><i>Calamagrostis canadensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
needleleaf sedge	<u><i>Carex duriuscula</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u><i>Carex filifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u><i>Carex interior</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u><i>Conium maculatum</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u><i>Crepis acuminata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
white prairie clover	<u><i>Dalea candida</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple prairie clover	<u><i>Dalea purpurea</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass	<u><i>Deschampsia caespitosa(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
inland saltgrass	<u><i>Distichlis spicata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
bearded wheatgrass	<u><i>Elymus caninus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Canada wildrye	<u><i>Elymus canadensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u><i>Elaeagnus commutata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush	<u><i>Elymus elymoides ssp.</i></u>													

squirreltail	<u><i>elymoides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus</i></u> <u><i>ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u><i>Eriogonum</i></u> <u><i>umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u><i>Gaura coccinea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus</i></u> <u><i>acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u> <u><i>Krascheninnikovia</i></u> <u><i>lanata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
bluebells	<u><i>Mertensia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
plains muhly, stoneyhills muhly	<u><i>Muhlenbergia</i></u> <u><i>cuspidata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mat muhly	<u><i>Muhlenbergia</i></u> <u><i>richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
green needlegrass	<u><i>Nassella viridula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u><i>Pascopyrum smithii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot	<u><i>Pediomelum</i></u> <u><i>esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
scurfpea	<u><i>Pediomelum</i></u> <u><i>esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u><i>Pinus ponderosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

Sandberg bluegrass	<u><i>Poa canbyi(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass plains cottonwood	<u><i>Poa cusickii</i></u> <u><i>Populus deltooides ssp. monilifera</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u><i>Poa secunda</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Sandberg bluegrass	<u><i>Poa secunda ssp. juncifolia(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
bluebunch wheatgrass	<u><i>Pseudoroegneria spicata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
upright prairie coneflower, prairie coneflower	<u><i>Ratibida columnifera</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u><i>Rhus trilobata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u><i>Rosa woodsii var. woodsii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
willow	<u><i>Salix</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
greasewood	<u><i>Sarcobatus vermiculatus</i></u>	Leaves	U	U	U	U	U	U	U	U	U	U	U	U

Animal kind: All horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
little bluestem	<u><i>Schizachyrium scoparium</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue-eyed grass	<u><i>Sisyrinchium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali sacaton	<u><i>Sporobolus airoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

sand dropseed *Sporobolus cryptandrus* Entire plant D D D D D D D D D D D D D

Animal kind: all horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
alkali cordgrass	<u><i>Spartina gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis	<u><i>Thermopsis rhombifolia var. annulocarpa(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u><i>Triglochin</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All sheep

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u><i>Andropogon gerardii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand bluestem	<u><i>Andropogon hallii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u><i>Artemisia cana</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Wyoming big	<u><i>Artemisia tridentata</i></u>													

sagebrush	<u>ssp. wyomingensis</u>	Entire plant	P	P	P	D	D	D	D	D	D	P	P	P
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	N	N	N	T	T	T	T	T	T	T	T	T
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u>Bouteloua hirsuta</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Buchloe</u>													
buffalograss	<u>dactyloides(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u>Calamagrostis canadensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
needleleaf sedge	<u>Carex duriuscula</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u>Carex interior</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Calamagrostis</u>													
plains reedgrass	<u>montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
white prairie clover	<u>Dalea candida</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple prairie clover	<u>Dalea purpurea</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
	<u>Deschampsia</u>													
	<u>caespitosa(syn)</u>													
tufted hairgrass		Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
bearded wheatgrass	<u>Elymus caninus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Canada wildrye	<u><i>Elymus canadensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u><i>Elaeagnus commutata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u><i>Elymus elymoides ssp. elymoides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u><i>Gaura coccinea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u><i>Krascheninnikovia lanata</i></u>	Entire plant	P	P	P	D	D	D	D	D	D	D	P	P	P
winterfat	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u><i>Mertensia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
plains muhly, stoneyhills muhly	<u><i>Muhlenbergia cuspidata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly green	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U

needlegrass	<u><i>Nassella viridula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u><i>Pascopyrum smithii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot	<u><i>Pediomelum</i></u>													
scurfpea	<u><i>esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u><i>Pinus ponderosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u><i>Poa canbyi(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u><i>Poa cusickii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u><i>Populus deltoides ssp. monilifera</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u><i>Poa secunda</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u><i>Poa secunda ssp. juncifolia(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
bluebunch wheatgrass	<u><i>Pseudoroegneria spicata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
upright prairie coneflower, prairie coneflower	<u><i>Ratibida columnifera</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
skunkbush sumac	<u><i>Rhus trilobata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u><i>Rosa woodsii var. woodsii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
willow	<u><i>Salix</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u><i>Sarcobatus vermiculatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
little bluestem	<u><i>Schizachyrium scoparium</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue-eyed grass	<u><i>Sisyrinchium</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

	<u>Thermopsis</u>		
prairie	<u>rhombifolia var.</u>		
thermopsis	<u>annulocarpa(syn)</u>	Entire plant	U U U U U U U U U U U U
arrowgrass	<u>Triglochin</u>	Entire plant	T T T T T T T T T T T T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U U U U U U U U U U U U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U U U U U U U U U U U U
American vetch	<u>Vicia americana</u>	Entire plant	P P P P P P P P P P P P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D D D D D D D D D D D D

Legend: P=Preferred; D=Desirable; U=Undesirable; N=Not consumed; E=Emergency; T=Toxic; X=Used, but degree of utilization unknown

Hydrology Functions

Water 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 ranges from moderately slow to moderate. Runoff potential for this site varies from low to moderate depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. 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 variety 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.

Supporting Information

Associated Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Clayey (Cy)	<u>R058BY104WY</u>	Clayey
Lowland (LL)	<u>R058BY128WY</u>	Lowland
Overflow (Ov)	<u>R058BY130WY</u>	Overflow
Sandy (Sy)	<u>R058BY150WY</u>	Sandy
Shallow Loamy (SwLy)	<u>R058BY162WY</u>	Shallow Loamy

Similar Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Loamy (Ly)	<u>R058BY222WY</u>	Loamy 15-17" Northern Plains P.Z. has higher production.

State Correlation

*This site has been correlated with the following states: **MT***

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site include: Glen Mitchell, Range Management Specialist, NRCS; Chuck Ring, 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, and USDA NRCS Soil Surveys from various counties.

Inventory Data References

Data Source	Number of Records	Sample Period	State	County
SCS-RANGE-417	12	1971-1994	WY	Campbell & others
Ocular estimates	5	1990-1999	WY	Campbell & others

Other References

Field Offices

Buffalo, Douglas, Gillette, Lusk, Newcastle, Sheridan

Original Site Description Approval

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
G. Mitchell	4/25/2000	E. Bainter	3/7/2008

Reference Sheet

Author(s)/participant(s):

Contact for lead author:

Date: 4/1/2005 **MLRA:** 058B **Ecological Site:** Loamy (Ly) 10-14"
Northern Plains Precipitation Zone R058BY122WY This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community cannot be used to identify the ecological site.

Composition (indicators 10 and 12) based on: X Annual Production, Foliar
Cover, Biomass

Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community and natural disturbance regimes within the reference state, when appropriate and (3) cite data. Continue descriptions on separate sheet.

1. Number and extent of rills: Rills should not be present.

2. Presence of water flow patterns: Barely observable.

3. Number and height of erosional pedestals or terracettes: Essentially non-existent.

4. Bare ground from Ecological Site Description or other studies (rock, litter, standing dead, lichen, moss, plant canopy are not bare ground): Bare ground is 20-30% occurring in small areas throughout site.

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: None

-
- 7. Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.
-
- 8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and litter is at 70% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.
-
- 9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness):** Use Soil Series description for depth and color of A-horizon.
-
- 10. Effect on plant community composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Moderate.
-
- 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 or soil surface crusting should be present.
-
- 12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to) with dominants and sub-dominants and "others" on separate lines:**
Dominant: Cool Season Bunch grasses > Cool Season Rhizomatous grasses > Short stature grasses/grasslikes > Forbs = Shrubs
Sub-dominant:
Other:
Additional:
-

- 13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very Low.
-
- 14. Average percent litter cover (%) and depth (inches):** Average litter cover is 25-35% with depths of 0.25 to 1.0 inches.
-
- 15. Expected annual production (this is TOTAL above-ground production, not just forage production):** 1200 lbs/ac
-
- 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 indicator, we are describing what is NOT expected in the reference state for the ecological site:** Blue grama, Threadleaf sedge, Fringed sagewort, Prickly Pear, Big sagebrush, Broom Snakeweed, and Species found on Noxious Weed List
-
- 17. Perennial plant reproductive capability:** All species are capable of reproducing.
-

Reference Sheet Approval

Approval
E. Bainter

Date
3/7/2008

United States Department of Agriculture Natural Resources Conservation Service Ecological Site Description

Section I: Ecological Site Characteristics

Ecological Site Identification and Concept

Site name: Leamy (Ly) 15-19" Precipitation Zone, Black Hills

Site type: Rangeland

Site ID: R061XY122WY

Major land resource area (MLRA): 061-Black Hills Foot Slopes

Esri | ArcGIS | ArcMap | ArcView | ArcCatalog | ArcSDE | ArcGIS Server | ArcGIS Online | ArcGIS for Desktop | ArcGIS for Mobile | ArcGIS for Enterprise | ArcGIS for Government | ArcGIS for Industry | ArcGIS for Research | ArcGIS for Science | ArcGIS for Social Media | ArcGIS for Spatial Analysis | ArcGIS for Spatial Data | ArcGIS for Spatial Modeling | ArcGIS for Spatial Simulation | ArcGIS for Spatial Visualization | ArcGIS for Spatial Web Services | ArcGIS for Spatial Web Mapping | ArcGIS for Spatial Web Publishing | ArcGIS for Spatial Web Services | ArcGIS for Spatial Web Mapping | ArcGIS for Spatial Web Publishing



Physiographic Features

This site occurs on land nearly level, up to 50% slopes.

Landform: (1) Hill
(2) Alluvial fan
(3) Stream terrace

	<u>Minimum</u>	<u>Maximum</u>
<i>Elevation (feet):</i>	3500	5000
<i>Slope (percent):</i>	0	6
<i>Water table depth (inches):</i>	60	
<i>Flooding</i>		
<i>Frequency:</i>	None	None
<i>Ponding</i>		
<i>Depth (inches):</i>	0	0
<i>Frequency:</i>	None	None
<i>Runoff class:</i>	Low	Medium
<i>Aspect:</i>	No Influence on this site	

Climatic Features

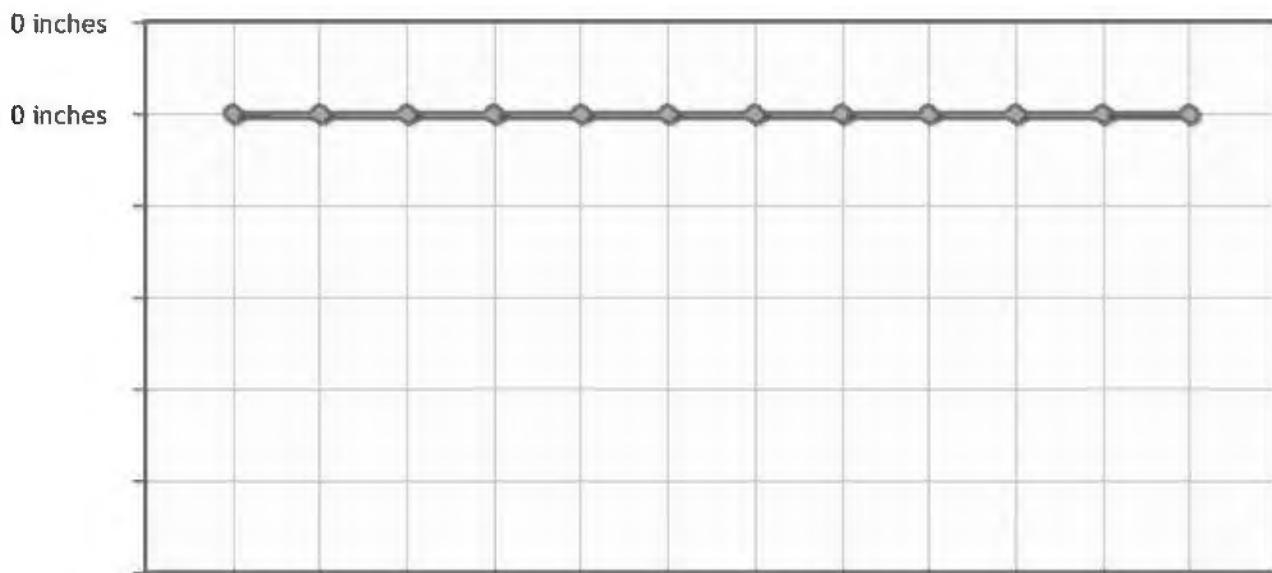
Annual precipitation ranges from 15-19 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring. Strong winds are less frequent than over other areas of Wyoming. Occasional storms, however, can bring brief periods of high winds with gusts exceeding 50 mph. Growth of native cool season plants begins about April 1 and continues to about July 1. Native warm season plants begin about May 15 and continue to about August 15. Fall green-up may occur in September and last through October. The following information is from the "Devils Tower 2" climate station: Minimum Maximum 5 yrs. out of 10 between Frost-free period (days) (32°F): 58 93 June 6 – September 7 Freeze-free period (days) (28°F): 95 125 May 18 – September 20 Annual Precipitation (inches): 14.81 20.17 Mean annual precipitation: 17.66 inches Mean annual air temperature: 44.4 F (28.6 F Avg. Min. to 60.1 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 "Hulett" and "Sundance"

Averaged

<i>Frost-free period (days):</i>	75
<i>Freeze-free period (days):</i>	110
<i>Mean annual precipitation (inches):</i>	20.17

Monthly Precipitation (Inches):

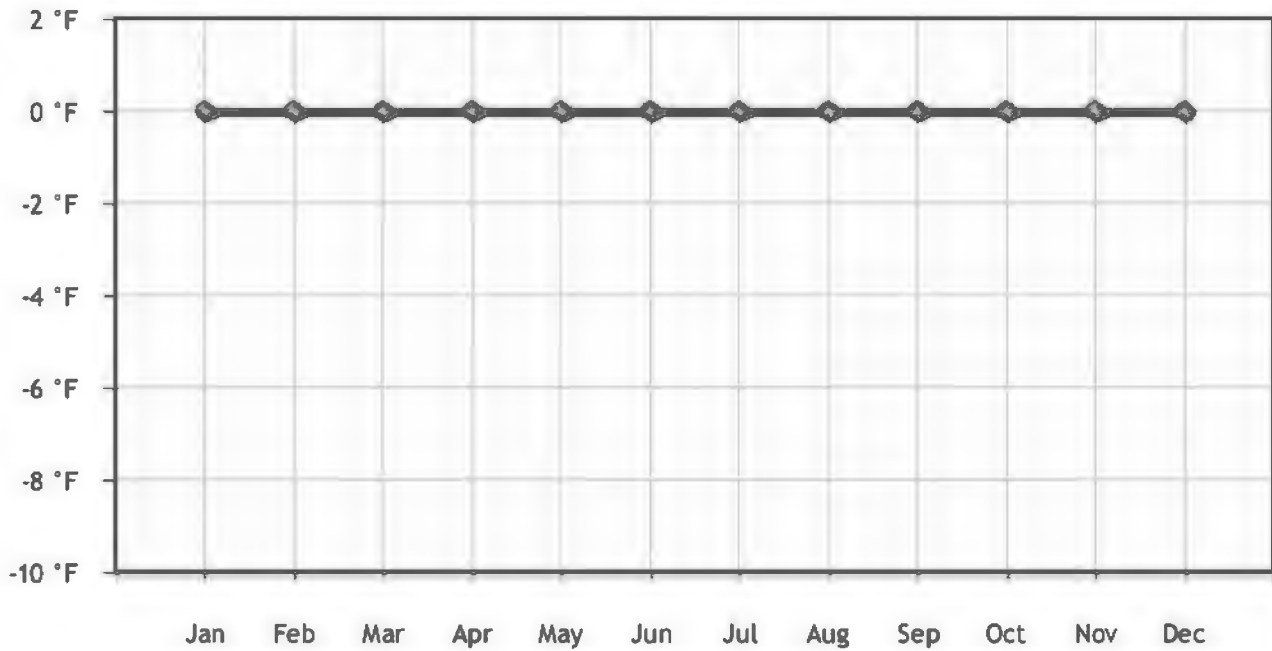
	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Low</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Monthly Temperature (°F):

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Low</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Influencing Water Features

Influencing Water Features

Wetland Description: System Subsystem Class Sub-class
None None None None None

Stream Type: None

Representative Soil Features

The soils of this site are deep to moderately deep (greater than 20" to bedrock), well-drained & moderately permeable. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam or clay loam texture.

Parent Material Kind: residuum and alluvium

Parent Material Origin: sandstone, unspecified

Surface Texture: loamy, silt loam, very fine sandy loam

Surface Texture Modifier: none is most common but gravelly or cobbly may occur

Subsurface Texture Group: loam

Surface Fragments < 3" (% Cover): 0

Surface Fragments > 3" (%Cover): typically 0, occasionally up to 10

Subsurface Fragments < 3" (% Volume): typically 0, occasionally up to 20

Subsurface Fragments > 3" (% Volume): typically 0, occasionally up to 10

Minimum Maximum

Drainage Class: moderately well drained well drained

Permeability Class: moderately slow moderate

Depth (inches): 20 >60

Electrical Conductivity (mmhos/cm) <20": 0 4

Sodium Absorption Ratio <20": 0 5

Soil Reaction (1:1 Water) <20": 7.8 8.4

Soil Reaction (0.1M CaCl₂) <20": NA NA

Available Water Capacity (inches) <30": 2.1 5.5

Calcium Carbonate Equivalent (percent) <20": 0 10

Surface texture: (1) Loam

(2) Silt loam

(3) Very fine sandy loam

Subsurface texture group: Loamy

Minimum

Maximum

<i>Surface fragments <=3" (% cover):</i>	0	0
<i>Surface fragments >3" (% cover):</i>	0	10
<i>Subsurface fragments <=3" (% volume):</i>	0	20
<i>Subsurface fragments >3" (% volume):</i>	0	10

Drainage class: Moderately well drained to well drained

Permeability class: Moderately slow to moderate

	<u>Minimum</u>	<u>Maximum</u>
<i>Depth (inches):</i>	20	60
<i>Available water capacity (inches):</i>	2.10	5.50
<i>Electrical conductivity (mmhos/cm):</i>	0	4
<i>Sodium adsorption ratio:</i>	0	5
<i>Calcium carbonate equivalent (percent):</i>	0	10
<i>Soil reaction (1:1 water):</i>	7.8	8.4

Plant Communities

Ecological Dynamics of the Site

Ecological Dynamics of the Site:

As this site deteriorates because of a combination of frequent and severe grazing, species such as blue grama and big sagebrush will increase. Grasses such as green needlegrass, needleandthread, big bluestem, little bluestem and western wheatgrass will decrease in frequency and production.

Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

The site is resilient when sagebrush is removed if a healthy and vigorous stand of grass exists and is maintained. The exception to this is where the herbaceous component is severely degraded at the time of treatment, growing conditions are unfavorable after treatment, and/or recovery periods are inadequate.

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.

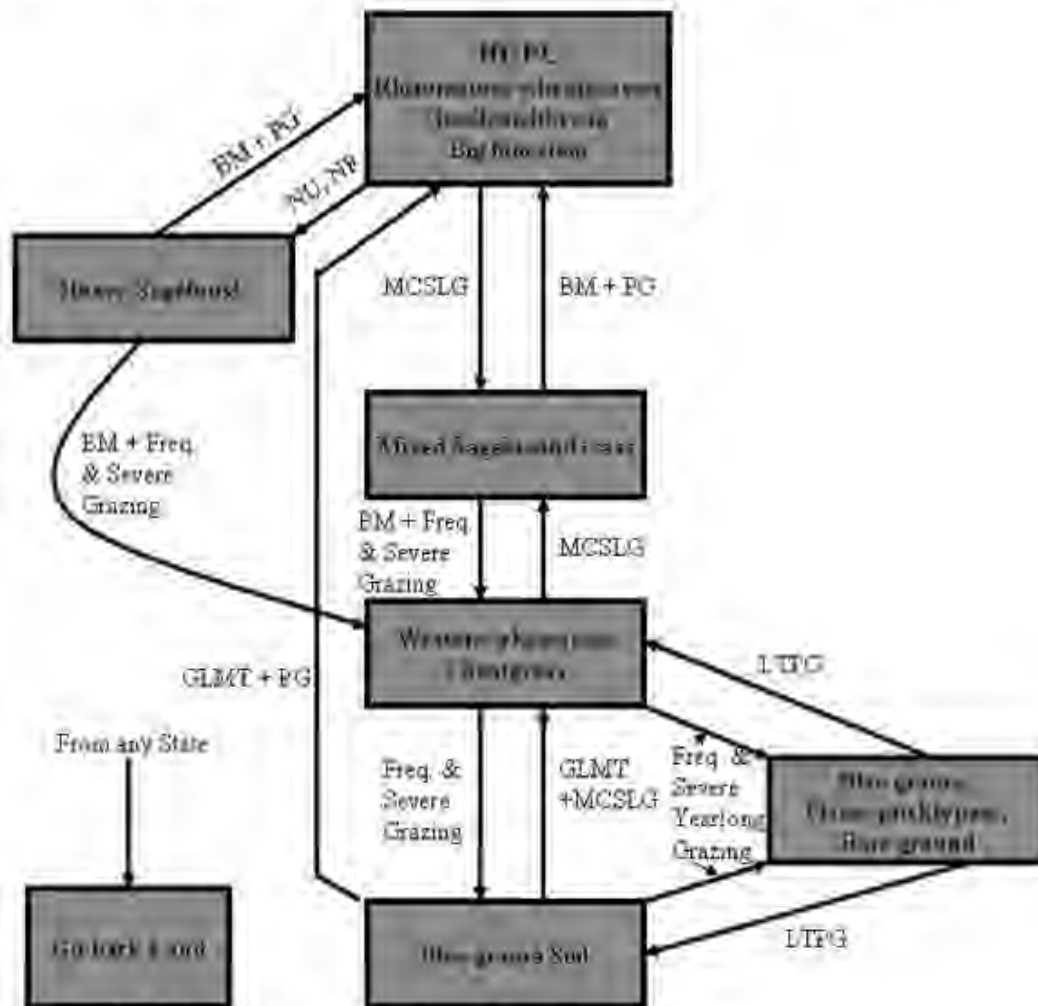
Plant Community Narratives

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

State-and-Transition Diagram

Site Type: Rangeland
MLRA: 01 - Black Hills Foot Slopes

Loamy 15-19" P.Z.
R061BY122WY



BM - Brush Management (fire, chemical, mechanical)
 Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool season Mid-grasses during the Growing Season
 GLMT - Grazing Land Mechanical Treatment
 LTPG - Long-term Prescribed Grazing
 MCSLG - Moderate, Continuous Season-long Grazing
 NU, NF - No Use and No Fire
 PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)
 VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)
 Na - found adjacent to a saline site

Technical Guide
Section III

4

USDA-NRCS
Rev. 03-08-01

Rhizomatous wheatgrasses needleandthread/Big bluestem

Rhizomatous Wheatgrasses/ Needleandthread/Big Bluestem Plant Community

This plant community is the Interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning,

and on areas receiving occasional short periods of rest. The potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% woody plants. A mix of warm and cool season mid-grasses dominates the state.

The major grasses include western wheatgrass, needleandthread, big bluestem, little bluestem, and green needlegrass. Other grasses occurring on the state include threadleaf sedge, Sandberg bluegrass, bluebunch wheatgrass, blue grama, and sideoats grama. A variety of forbs and half-shrubs also occur, as shown in the preceding table. Big sagebrush is a conspicuous element of this state, occurs in a mosaic pattern, and makes up 5 to 10% of the annual production. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 2200 lbs/acre, but it can range from about 1500 lbs/acre in unfavorable years to about 3000 lbs/acre in above average years.

This plant community is extremely stable and well adapted to the Black Hills Foot Slopes climatic conditions. The diversity in plant species allows for high drought tolerance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity).

Transitions or pathways leading to other plant communities are as follows:

- No use and no fire for 20 years or more will convert this plant community to the Heavy Sagebrush Plant Community.
- Moderate, continuous season-long grazing will convert the plant community to the Mixed Sagebrush/Grass Plant Community.
- When cropped annually and then abandoned without reseeding, the state is converted to the Go-back Land Plant Community.

Rhizomatous wheatgrasses needleandthread/Big bluestem Plant Species Composition

Grass/Grasslike				Annual Production (pounds per acre)	
<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
1	streambank wheatgrass, thickspike wheatgrass	ELLAL	<i><u>Elymus lanceolatus ssp. lanceolatus</u></i>	220	550
	western wheatgrass	PASM	<i><u>Pascopyrum smithii</u></i>	220	550
2	green needlegrass	NAVI4	<i><u>Nassella viridula</u></i>	220	550
3	Columbia			220	550

	needlegrass, subalpine needlegrass	ACNE9	<u><i>Achnatherum nelsonii</i></u>	220	550
4	Richardson's needlegrass	ACRI8	<u><i>Achnatherum richardsonii</i></u>	220	550
5	needle and thread, needleandthread	HECO26	<u><i>Hesperostipa comata</i></u>	220	330
6	blue wildrye	ELGL	<u><i>Elymus glaucus</i></u>	110	220
7	sideoats grama	BOCU	<u><i>Bouteloua curtipendula</i></u>	110	220
8	blue grama	BOGR2	<u><i>Bouteloua gracilis</i></u>	110	220
9	Cusick's bluegrass, Cusick bluegrass	POCU3	<u><i>Poa cusickii</i></u>	110	220
10	Grass, perennial big bluestem	2GP ANGE		0	110
	Pumpelly's brome	BRINP5	<u><i>Andropogon gerardii</i></u> <u><i>Bromus inermis ssp. pumpellianus var. pumpellianus</i></u>	0	110
	threadleaf sedge	CAFI	<u><i>Carex filifolia</i></u>	0	110
	plains reedgrass	CAMO	<u><i>Calamagrostis montanensis</i></u>	0	110
	onespike danthonia, onespike oatgrass	DAUN	<u><i>Danthonia unispicata</i></u>	0	110
	bearded wheatgrass	ELCA11	<u><i>Elymus caninus</i></u>	0	110
	slender wheatgrass	ELTR7	<u><i>Elymus trachycaulus</i></u>	0	110
	prairie Junegrass	KOMA	<u><i>Koeleria macrantha</i></u>	0	110
	spike fescue, kingspike fescue	LEKI2	<u><i>Leucopoa kingii</i></u>	0	110
	Sandberg bluegrass	POCA	<u><i>Poa canbyi(syn)</i></u>	0	110
	fowl bluegrass	POPA2	<u><i>Poa palustris</i></u>	0	110
	Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	POSE	<u><i>Poa secunda</i></u>	0	110
	bluebunch wheatgrass	PSSP6	<u><i>Pseudoroegneria spicata</i></u>	0	110
	little bluestem	SCSC	<u><i>Schizachyrium scoparium</i></u>	0	110

Forb				<u>Annual Production (pounds per acre)</u>		
<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
11		Forb, perennial	2FP		220	330
		prairie sagewort, fringed sagewort	ARFR4	<u>Artemisia frigida</u>	0	110
		white sagebrush, cudweed sagewort	ARLU	<u>Artemisia ludoviciana</u>	0	110
		prairie clover	DALEA	<u>Dalea</u>	0	110
		fleabane	ERIGE2	<u>Erigeron</u>	0	110
		buckwheat	ERIOG	<u>Eriogonum</u>	0	110
		desertparsley, biscuitroot	LOMAT	<u>Lomatium</u>	0	110
		bluebells	MERTE	<u>Mertensia</u>	0	110
		silverleaf Indian breadroot	PEAR6	<u>Pediomelum argophyllum</u>	0	110
		beardtongue, penstemon	PENST	<u>Penstemon</u>	0	110
		upright prairie coneflower, prairie coneflower	RACO3	<u>Ratibida columnifera</u>	0	110
		American vetch	VIAM	<u>Vicia americana</u>	0	110
		deathcamas	ZIGAD	<u>Zigadenus</u>	0	110

Shrub/Vine				<u>Annual Production (pounds per acre)</u>		
<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
12		big sagebrush	ARTR2	<u>Artemisia tridentata</u>	0	110
13		Shrub (>.5m)	2SHRUB		0	110

Plant Growth Curve

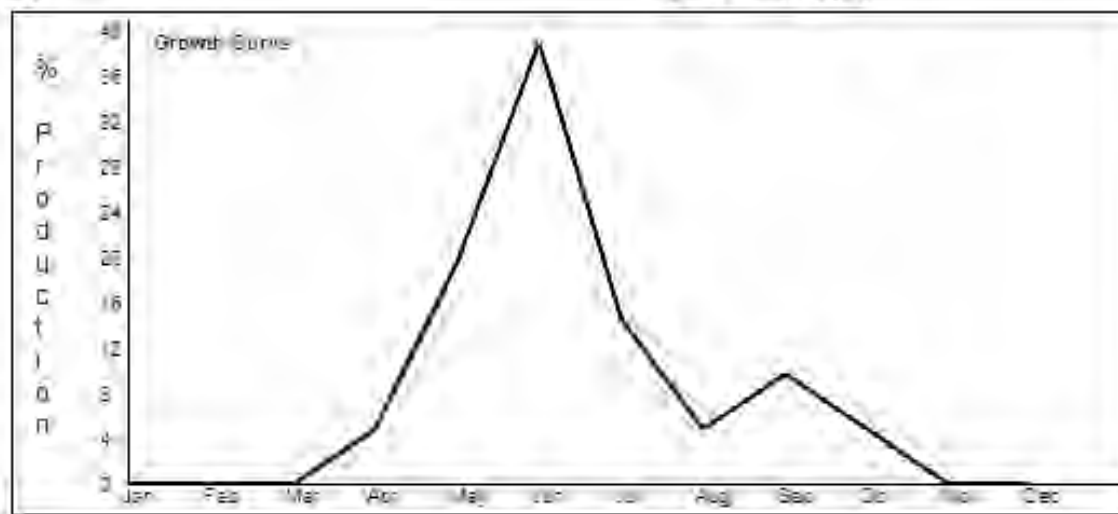
Growth curve
number: WY1601

Growth curve
name: 15-19BL Upland sites

Growth curve
description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	5	20	40	15	5	10	5	0	0



Mixed sagebrush/grass

Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. Big sagebrush is a significant component of this plant community. A mix of warm and cool-season grasses make up the majority of the understory with the balance made up of annual cool-season grasses, and miscellaneous forbs.

Dominant grasses include needleandthread, western wheatgrass, little bluestem and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs commonly found in this plant community include plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Production of cool-season grasses, particularly green needlegrass, has been reduced. The cool-season mid-grasses are protected by the sagebrush canopy, but this protection makes them unavailable for grazing. Cheatgrass (downy brome) has invaded the state. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

The total annual production (air-dry weight) of this state is about 1600 pounds per acre, but it can range from about 900 lbs/acre in unfavorable years to about 2500 lbs/acre in above average years.

This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

Transitions or pathways leading to other plant communities are as follows:

- Brush management (chemical, fire, or mechanical), followed by prescribed grazing, will convert this plant community to the Rhizomatous wheatgrasses/ Needleandthread/ Big Bluestem Plant Community. The probability of this occurring is high. When prescribed fire is used, sufficient fine fuels will need to be present. This may require deferment from grazing prior to treatment. Post management is critical to ensure success. This can range from two or more years of rest to partial growing season deferment, depending on the condition of the understory at the time of treatment and the growing conditions following treatment.
- Brush management, followed by frequent and severe grazing, will convert the plant community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high. If bare areas exist after treatment, along with no recovery periods from grazing, cheatgrass will invade and plants not as resistant to grazing, such as green needlegrass, will be reduced.

Plant Growth Curve

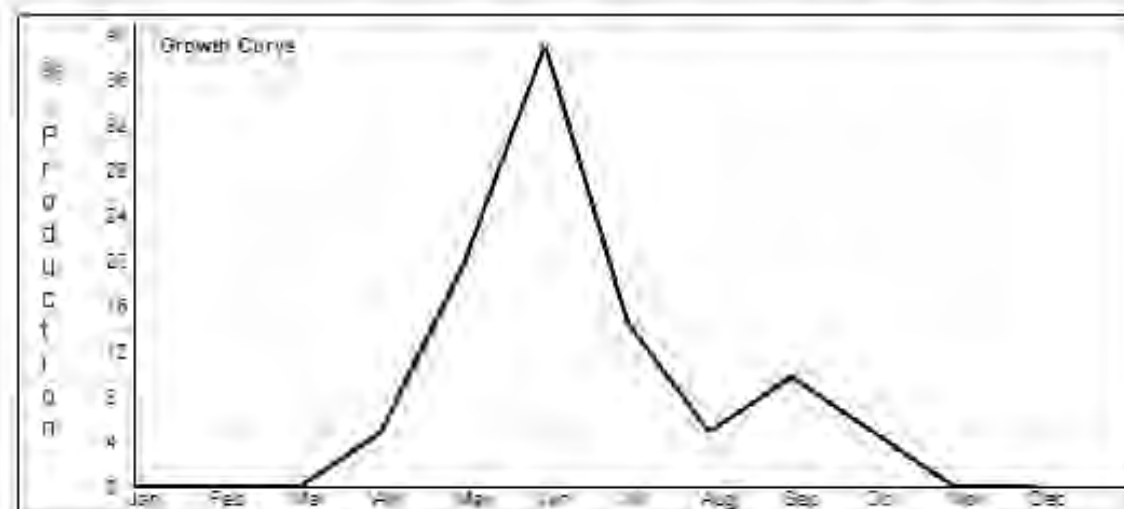
Growth curve number: WY1801

Growth curve name: 15-198L Upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	40	15	5	10	5	0	0



Heavy Sagebrush

Heavy Sagebrush Plant Community

This plant community is the result of long-term protection from grazing and fire. Big sagebrush eventually dominates this plant community with canopy cover often exceeding 60%. At first, excessive litter builds up shading out some of the grasses and forbs. Other plants become decadent with low vigor. Bunch grasses often develop dead centers. Eventually, the interspaces between plants increase in size leaving more soil surface exposed. Organic matter oxidizes in the air rather than being incorporated into the soil.

The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community. Weedy species, cool-season grasses, and sedges have increased. Blue grama has decreased. Rodent activity has resulted in an increase in soil disturbance. Cactus and sageworts often increase. Noxious weeds such as Dalmatian toadflax, leafy spurge, or Canada thistle may invade the state if a seed source is present. Plant diversity is moderate to high.

The total annual production (air-dry weight) of this state is about 1200 pounds per acre, but it can range from about 900 lbs/acre in unfavorable years to about 2400 lbs/acre in above average years.

This plant community is not resistant to change and is more vulnerable to severe disturbance than the HCPC. The introduction of grazing or fire quickly changes the plant community.

Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestaling are obvious. Infiltration is reduced and runoff is increased.

Transitions or pathways leading to other plant communities are as follows:

- Brush management, followed by prescribed grazing, will return this plant community to at or near the Rhizomatous Wheatgrasses/ Needleandthread/ Big Bluestem Plant Community.
- Brush management, followed by frequent and severe grazing, will convert the plant community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high because of the amount of bare ground exposed to cheatgrass invasion.

Plant Growth Curve

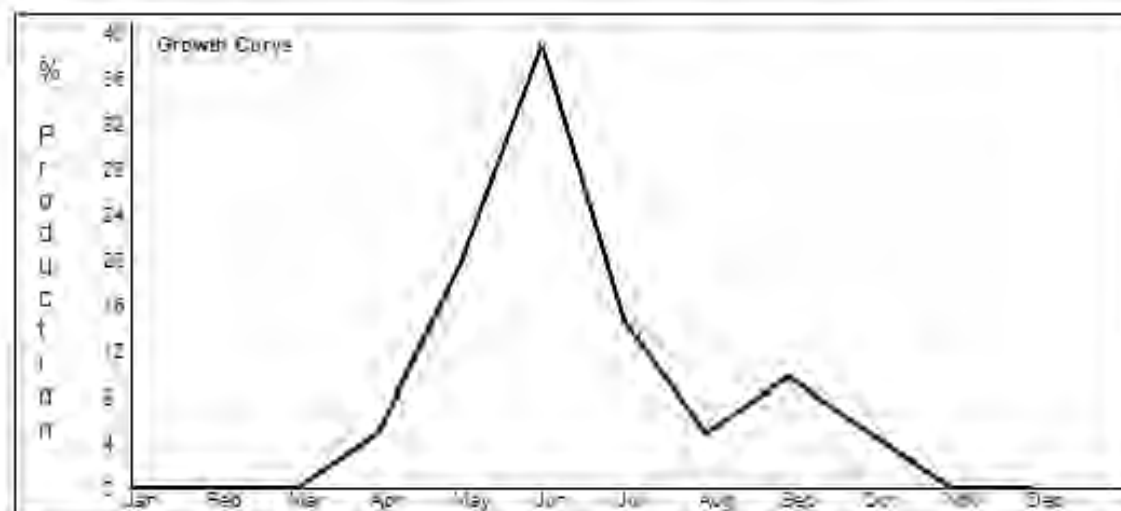
Growth curve number: WY1601

Growth curve name: 15-19BL Upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	6	20	40	16	6	10	6	0	0



Western wheatgrass/ cheatgrass

Western Wheatgrass/Cheatgrass Plant Community

This plant community is created when the Mixed Sagebrush/Grass Plant Community or the Heavy Sagebrush Plant Community is subjected to fire or brush management not followed by prescribed grazing. Rhizomatous wheatgrasses and annuals will dominate the state.

Compared to the HCPC, cheatgrass has invaded with western wheatgrass and thickspike wheatgrass maintaining at a similar or slightly higher level. Virtually all other cool-season mid-grasses are severely decreased. Blue grama is the same or slightly less than found in the HCPC. Plant diversity is low.

The total annual production (air-dry weight) of this state is about 1100 pounds per acre, but it can range from about 800 lbs/acre in unfavorable years to about 1500 lbs/acre in above average years.

This plant community is relatively stable with the rhizomatous wheatgrasses being somewhat resistant to overgrazing and the cheatgrass effectively competing against the establishment of perennial cool-season grasses.

An increase in bare ground reduces water infiltration and increases soil erosion. The watershed is usually functioning. The biotic integrity is reduced by the lack of diversity in the plant community.

Transitions or pathways leading to other plant communities are as follows:

- Moderate continuous season-long grazing will eventually return this plant community to the Mixed Sagebrush/Grass Plant Community.
- Frequent and severe grazing will convert this plant community to Blue Grama Sod Plant Community.

- Frequent and severe yearlong grazing will convert this plant community to Blue grama, Plains Pricklypear/ Bare Ground Plant Community.
- Long-term, prescribed grazing will eventually return this plant community to at or near the Rhizomatous Wheatgrasses/ Needleandthread/ Big Bluestem Plant Community.

Plant Growth Curve

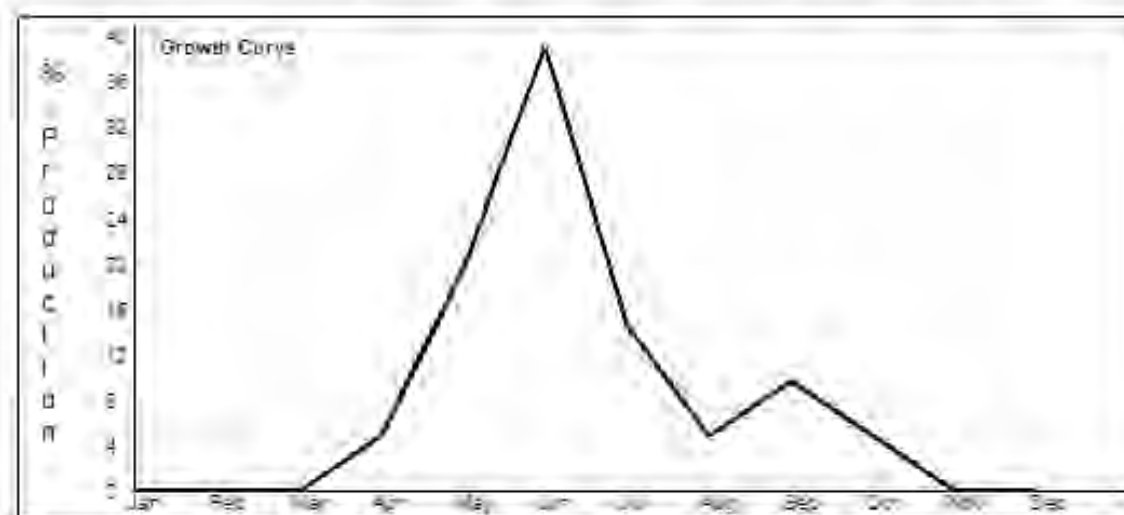
Growth curve number: WY1801

Growth curve name: 15-19BL Upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	40	15	5	10	5	0	0



Blue grama sod

Blue Grama Sod Plant Community

This plant community is the result of frequent and severe grazing during the growing season of the cool-season mid-grasses. A dense sod of blue grama dominates. Pricklypear cactus can become dense enough so that livestock cannot graze forage growing within the cactus clumps.

When compared to the Historic Climax Plant Community, blue grama and threadleaf sedge have increased. All cool-season mid-grasses and forbs have been greatly reduced. Plant diversity is extremely low.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 450 lbs/acre in unfavorable years to about 1100 lbs/acre in above average years.

This sod bound plant community is very resistant to water infiltration. While this sod protects the state itself, off-site areas are affected by excessive runoff that can cause gully erosion. This sod is very resistant to change and may require grazing land mechanical treatment, such as chiseling, to return the cool-season grass component.

Transitions or pathways leading to other plant communities are as follows:

- Grazing land mechanical treatment (chiseling, etc.) and pricklypear cactus control (if needed), followed by prescribed grazing, will return this plant community to near Historic Climax Plant Community condition.
- Grazing land mechanical treatment, followed by moderate continuous season-long grazing, will convert this plant community to the Western Wheatgrass/Cheatgrass Plant Community.
- Frequent and severe yearlong grazing will eventually convert this state to the Blue Grama/ Plains Pricklypear/ Bare Ground Plant Community.

Plant Growth Curve

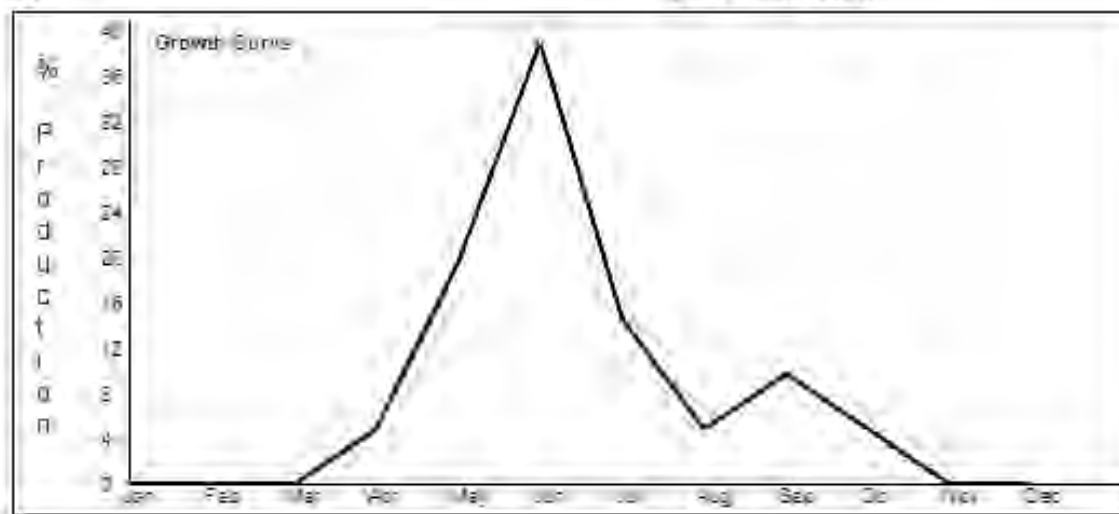
Growth curve number: WY1601

Growth curve name: 15-19BL Upland sites

Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	5	20	40	15	5	10	5	0	0



blue grama/plains pricklypear/bare ground

Blue Grama/ Plains Pricklypear/ Bare Ground Plant Community

This plant community is the result of frequent and severe yearlong grazing over the long-term. Perennial plants are decreased. Cheatgrass, annual weeds, and bare ground have increased. Plains pricklypear has increased, rendering much of the forage unusable by livestock.

This plant community is highly variable depending on the severity, frequency, and duration of the grazing and also the condition of the plant community when this level of grazing began. Virtually all plants not resistant to overgrazing may have been eliminated. Dominant plants may include blue grama, threeawns, annuals, and rhizomatous wheatgrasses to a lesser degree. Perennial plant diversity is low.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 400 lbs/acre in unfavorable years to about 800lbs/acre in above average years.

This state is unhealthy and subject to increased erosion. Runoff is high on these states due to the sod nature of blue grama and bare ground.

Transitions or pathways leading to other plant communities are as follows:

- Long-term prescribed grazing will convert this plant community initially to the Blue Grama Sod Plant Community, when the state is dominated by blue grama sod at the time of treatment.
- Long-term prescribed grazing will convert this plant community to the Western Wheatgrass /Cheatgrass Plant Community, when the state has large amounts of cheatgrass, annual weeds, and bare ground at the time of treatment. Control of plains pricklypear cactus may be necessary.

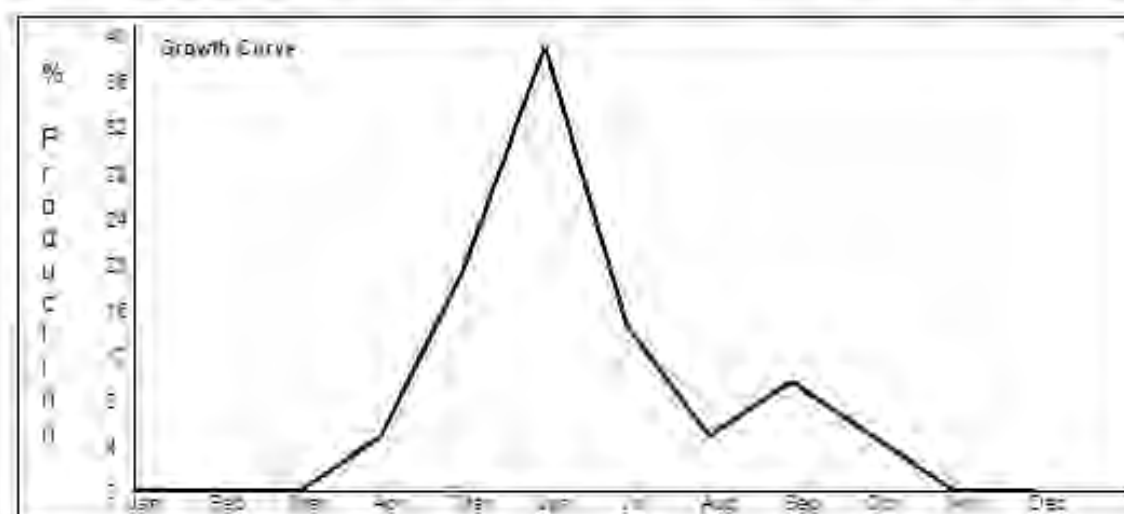
Reseeding areas with native plant species and proper grazing management may be necessary to accelerate recovery where few desirable plants remain.

Plant Growth Curve

Growth curve number: WY1801
Growth curve name: 15-198L Upland sites
Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	40	15	5	10	5	0	0



Go-back Land

Go-back Land Plant Community

This plant community occurs on land that has been cropped annually in the past and then abandoned without reseeding. Natural succession has resulted in a plant community dominated by varying combinations of threeawns, cheatgrass, blue grama, Sandberg bluegrass, and some rhizomatous wheatgrasses. Forage production is low since grasses such as threeawns and cheatgrass are not used efficiently by livestock.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 600 lbs/acre in unfavorable years to about 1200 lbs/acre in above average years.

Growth curve description: Too variable to estimate

The potential for accelerated erosion can be highly variable depending on amount of bare ground present. Biological diversity is low.

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing may be used to increase desirable native cool-season grass production. It is usually difficult to return to near Historic Climax Plant Community condition in a timely manner because of past soil loss.
- Grazing land mechanical treatment (i.e., chiseling) may improve forage production where significant rhizomatous wheatgrass is present to respond.

Where there is a lack of perennial grasses, reseeding to tame or native species may be necessary to return these lands to production in the form of pastureland. These pastures are normally seeded to crested wheatgrass, pubescent wheatgrass, or Russian wildrye. They require considerable investment to establish and have a variable life expectancy. They do produce up to 50% more than native range, but their value as forage is somewhat limited due to the single species usually seeded. In some cases, the single species or certain groups of species (e.g., wheatgrasses) may be more vulnerable to infestation by associated insects and/or diseases (e.g., black grass bugs).

Section II: Ecological Site Interpretations

Animal Community

Animal Community – Wildlife Interpretations

Rhizomatous Wheatgrasses/ Needleandthread/Big Bluestem Plant Community (HCPC): 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. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include Western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Mixed Sagebrush/Grass Plant Community: The combination of an overstory of sagebrush and an understory of grasses and forbs provide a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows' nest in big sagebrush plants and hosts of other nesting birds utilize stands in the 20-30% cover range.

Heavy Sagebrush Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community provides excellent escape and thermal cover for large ungulates, as well as nesting and brood rearing habitat for sage grouse.

Western Wheatgrass/Cheatgrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

Blue Grama Sod and Go-back Land Plant Communities: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Western Wheatgrass/Cheatgrass Plant Community is limited. Generally, these are not target plant communities for wildlife habitat management.

Blue Grama, Plains Pricklypear/Bare Ground Plant Community: Benefits to other wildlife are largely due to the subterranean structure created by the prairie dogs, not the sparse vegetation found on this plant community.

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* (Lbs/acre) (AUM/acre)

Rhizomatous WG/ Needleandthread/ Big Bluestem 1500-3000 .6

Heavy Sagebrush 900-2400 .35

Mixed Sagebrush/Grass 900-2500 .5

Western Wheatgrass/Cheatgrass 800-1500 .35

Blue Grama Sod 450-750 .25

Blue grama/Plains Pricklypear/ Bare ground 400-800 .20

Go-back Land 800-1500 .25

* - 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.

Plant Preference by Animal Kind

Animal kind: all antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silverweed	<u><i>Argentina anserina</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
cinquefoil	<u><i>Artemisia cana ssp. cana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
silver sagebrush	<u><i>Artemisia dracuncululus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tarragon, green sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u><i>Arenaria</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
black sagebrush	<u><i>Artemisia nova</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u><i>Aster</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

shadscale saltbush	<u><i>Atriplex confertifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
American sloughgrass	<u><i>Beckmannia syzigachne</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mustard	<u><i>Brassica</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u><i>Carex aquatilis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u><i>Carex filifolia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
beaked sedge	<u><i>Carex rostrata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
garden yellowrocket	<u><i>Campe stricta(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian paintbrush, paintbrush	<u><i>Castilleja</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u><i>Calamagrostis stricta ssp. inexpansa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Douglas' dustymaiden	<u><i>Chaenactis douglasii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u><i>Conium maculatum</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u><i>Crepis acuminata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buttecandle, minerscandle	<u><i>Cryptantha celosioides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

miner's candle	<u><i>Cryptantha virgata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
plains springparsley	<u><i>Cymopterus acaulis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted hairgrass	<u><i>Deschampsia caespitosa(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
larkspur	<u><i>Delphinium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u><i>Distichlis spicata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u><i>Elatine californica</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u><i>Elymus canadensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
silverberry	<u><i>Elaeagnus commutata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u><i>Elymus elymoides ssp. elymoides</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
fleabane	<u><i>Erigeron</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American mannagrass	<u><i>Glyceria grandis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
spiny hopsage	<u><i>Grayia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread,		Entire												

needleandthread	<u>Hesperostipa comata</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
iris	<u>Iris</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Baltic rush	<u>Juncus balticus(syn)</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
rush	<u>Juncus</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Utah juniper	<u>Juniperus osteosperma</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
prairie Junegrass	<u>Koeleria macrantha</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
winterfat	<u>Krascheninnikovia</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
basin wildrye	<u>Leymus cinereus</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
licorice-root, lovage	<u>Ligusticum</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
desertparsley, biscuitroot	<u>Lomatium</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
lupine	<u>Lupinus</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
prairie bluebells	<u>Mertensia lanceolata</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
Nuttall's povertyweed	<u>Monolepis nuttalliana</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
mat muhly	<u>Muhlenbergia richardsonis</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
tufted evening-primrose	<u>Oenothera caespitosa</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
nailwort	<u>Paronychia</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
western wheatgrass	<u>Pascopyrum smithii</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
large Indian breadroot, breadroot	<u>Pediomelum</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
	<u>esculentum</u>	Entire												
scurfpea		plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
beardtongue, penstemon	<u>Penstemon</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
reed canarygrass	<u>Phalaris arundinacea</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
phlox	<u>Phlox</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												

bud sagebrush, bud sagewort	<u>Picrothamnus desertorum</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
woolly plantain, woolly Indianwheat	<u>Plantago patagonica</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u>Poa ampla(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western buttercup	<u>Ranunculus occidentalis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
wax currant	<u>Ribes cereum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
western dock	<u>Rumex aquaticus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
willow	<u>Salix</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bulrush	<u>Scirpus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
beaked skeletonweed	<u>Shinnersoseris rostrata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
alkali sacaton	<u><i>Sporobolus airoides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u><i>Spartina gracilis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie cordgrass	<u><i>Spartina pectinata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desert princesplume	<u><i>Stanleya pinnata var. pinnata</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
shortspine horsebrush, spiny horsebrush	<u><i>Tetradymia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u><i>Triglochin</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
badlands mule- ears	<u><i>Wyethia scabra(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
woodyaster	<u><i>Xylorhiza</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u><i>Zigadenus paniculatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
silverweed	<u><i>Argentina anserina</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
cinquefoil	<u><i>Artemisia cana ssp. cana</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
silver sagebrush	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u><i>Arenaria</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
black sagebrush	<u><i>Artemisia nova</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
aster	<u><i>Aster</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
shadscale saltbush	<u><i>Atriplex confertifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
American sloughgrass	<u><i>Beckmannia syzigachne</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
mustard	<u><i>Brassica</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u><i>Carex aquatilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
		Entire											

threadleaf sedge	<u>Carex filifolia</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
prairie sandreed	<u>Calamovilfa longifolia</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
	<u>Calamagrostis montanensis</u>	Entire												
plains reedgrass		plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
spike sedge	<u>Carex nardina</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
Nebraska sedge	<u>Carex nebrascensis</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
beaked sedge	<u>Carex rostrata</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
garden		Entire												
yellowrocket	<u>Campe stricta(syn)</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
Indian paintbrush,		Entire												
paintbrush	<u>Castilleja</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
northern	<u>Calamagrostis stricta</u>	Entire												
reedgrass	<u>ssp. inexpansa</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
Douglas'		Entire												
dustymaiden	<u>Chaenactis douglasii</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow														
rabbitbrush, green														
rabbitbrush, low														
rabbitbrush,														
Douglas	<u>Chrysothamnus</u>	Entire												
rabbitbrush	<u>viscidiflorus</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
water hemlock	<u>Cicuta</u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
		Entire												
poison hemlock	<u>Conium maculatum</u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip		Entire												
hawksbeard	<u>Crepis acuminata</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
buttecandle,		Entire												
minerscandle	<u>Cryptantha celosioides</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
miner's candle	<u>Cryptantha virgata</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
plains		Entire												
springparsley	<u>Cymopterus acaulis</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Deschampsia</u>	Entire												
tufted hairgrass	<u>caespitosa(syn)</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
larkspur	<u>Delphinium</u>	plant	U	D	D	D	D	D	D	D	U	D	D	D
California		Entire												
waterwort	<u>Elatine californica</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
Canada wildrye	<u>Elymus canadensis</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P

silverberry	<u><i>Elaeagnus commutata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u><i>Elymus elymoides ssp. elymoides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	P	P	D	P	P	P	P	P	P	P	P	P
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
fleabane	<u><i>Erigeron</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
spiny hopsage	<u><i>Grayia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rush	<u><i>Juncus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Utah juniper	<u><i>Juniperus osteosperma</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

licorice-root, lovage	<u>Ligusticum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
lupine	<u>Lupinus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie bluebells	<u>Mertensia lanceolata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's povertyweed	<u>Monolepis nuttalliana</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted evening- primrose	<u>Oenothera caespitosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
nailwort	<u>Paronychia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
beardtongue, penstemon	<u>Penstemon</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
reed canarygrass	<u>Phalaris arundinacea</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
phlox	<u>Phlox</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
bud sagebrush, bud sagewort	<u>Picrothamnus desertorum</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
woolly plantain, woolly Indianwheat	<u>Plantago patagonica</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u>Poa ampla(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

Nuttall's alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
western buttercup	<u><i>Ranunculus occidentalis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u><i>Rhus trilobata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
wax currant	<u><i>Ribes cereum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
Woods' rose	<u><i>Rosa woodsii var. woodsii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
western dock	<u><i>Rumex aquaticus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
willow	<u><i>Salix</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u><i>Sarcobatus vermiculatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
bulrush	<u><i>Scirpus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
little bluestem beaked skeletonweed	<u><i>Schizachyrium scoparium</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
blue-eyed grass	<u><i>Shinnersoseris rostrata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
	<u><i>Sisyrinchium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	E	M	A	M	J	J	A	S	O	N	D
alkali sacaton	<u><i>Sporobolus airoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

Animal kind: all cattle

Plant

<u>Common name</u>	<u>Scientific name</u>	<u>part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
desert princesplume	<u>Stanleya pinnata var. pinnata</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
shortspine horsebrush, spiny horsebrush	<u>Tetradymia spinosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
badlands mule-ears	<u>Wyethia scabra(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
woodyaster	<u>Xylorhiza</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u>Zigadenus paniculatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

Animal kind: all deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

silverweed cinquefoil	<u>Argentina anserina</u>	Entire plant	U U U U U U U U U U U U U
silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	P P P P P P P P P P P P P
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U U U U U U U U U U U U U
sandwort	<u>Arenaria</u>	Entire plant	U U U U U U U U U U U U U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U U U U U U U U U U U U U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U U U U U U U U U U U U U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U U U U U U U U U U U U U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	D D D D D D D D D D D D D
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T T T T T T T T T T T T T
aster	<u>Aster</u>	Entire plant	U U U U U U U U U U U U U
milkvetch	<u>Astragalus</u>	Entire plant	D D D D D D D D D D D D D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P P P P P P P P P P P P P
shadscale saltbush	<u>Atriplex confertifolia</u>	Entire plant	U U U U U U U U U U U U U
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P P P P P P P P P P P P P
American sloughgrass	<u>Beckmannia syzigachne</u>	Entire plant	U U U U U U U U U U U U U
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D D D D D D D D D D D D D
mustard	<u>Brassica</u>	Entire plant	U U U U U U U U U U U U U
water sedge	<u>Carex aquatilis</u>	Entire plant	U U U U U U U U U U U U U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D D D D D D D D D D D D D
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	U U U U U U U U U U U U U
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D D D D D D D D D D D D D
spike sedge	<u>Carex nardina</u>	Entire plant	U U U U U U U U U U U U U

Entire

Nebraska sedge	<u>Carex nebrascensis</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
beaked sedge	<u>Carex rostrata</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
garden		Entire												
yellowrocket	<u>Campe stricta(syn)</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian paintbrush,		Entire												
paintbrush	<u>Castilleja</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
northern		Entire												
reedgrass	<u>Calamagrostis stricta</u> <u>ssp. inexpansa</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
Douglas'		Entire												
dustymaiden	<u>Chaenactis douglasii</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow														
rabbitbrush, green														
rabbitbrush, low														
rabbitbrush,														
Douglas		Entire												
rabbitbrush	<u>Chrysothamnus</u> <u>viscidiflorus</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire												
poison hemlock	<u>Conium maculatum</u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip		Entire												
hawksbeard	<u>Crepis acuminata</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
buttecandle,		Entire												
minerscandle	<u>Cryptantha celosioides</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
miner's candle		Entire												
plains	<u>Cryptantha virgata</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
springparsley	<u>Cymopterus acaulis</u>	Entire												
tufted hairgrass	<u>Deschampsia</u> <u>caespitosa(syn)</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
larkspur	<u>Delphinium</u>	Entire												
inland saltgrass	<u>Distichlis spicata</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
California		Entire												
waterwort	<u>Elatine californica</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u>Elymus canadensis</u>	Entire												
silverberry	<u>Elaeagnus commutata</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
squirreltail,		Entire												
bottlebrush	<u>Elymus elymoides ssp.</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail	<u>elymoides</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
streambank														
wheatgrass,														

thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
fleabane	<u><i>Erigeron</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American mannagrass	<u><i>Glyceria grandis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
spiny hopsage	<u><i>Grayia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rush	<u><i>Juncus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Utah juniper	<u><i>Juniperus osteosperma</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
licorice-root, lovage	<u><i>Ligusticum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

lupine	<u>Lupinus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie bluebells	<u>Mertensia lanceolata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's povertyweed	<u>Monolepis nuttalliana</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted evening-primrose	<u>Oenothera caespitosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
nailwort	<u>Paronychia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot	<u>Pediomelum esculentum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
scurfpea														
beardtongue, penstemon	<u>Penstemon</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
reed canarygrass	<u>Phalaris arundinacea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
phlox	<u>Phlox</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
bud sagebrush, bud sagewort	<u>Picrothamnus desertorum</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
woolly plantain, woolly Indianwheat	<u>Plantago patagonica</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u>Poa ampla(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

western buttercup	<u>Ranunculus occidentalis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
wax currant	<u>Ribes cereum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
western dock	<u>Rumex aquaticus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bulrush	<u>Scirpus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
beaked skeletonweed	<u>Shinnersoseris rostrata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desert princesplume	<u>Stanleya pinnata var. pinnata</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
shortspine														

horsebrush, spiny horsebrush	<u>Tetradymia spinosa</u>	Entire plant	U U U U U U U U U U U U
arrowgrass	<u>Triglochin</u>	Entire plant	T T T T T T T T T T T T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U U U U U U U U U U U U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U U U U U U U U U U U U
American vetch badlands mule- ears	<u>Vicia americana</u> <u>Wyethia scabra(syn)</u>	Entire plant	P P P P P P P P P P P P
woodyaster	<u>Xylorhiza</u>	Entire plant	T T T T T T T T T T T T
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D D D D D D D D D D D D
foothill deathcamas	<u>Zigadenus paniculatus</u>	Entire plant	T T T T T T T T T T T T

Animal kind: all horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u> <u>F</u> <u>M</u> <u>A</u> <u>M</u> <u>J</u> <u>J</u> <u>A</u> <u>S</u> <u>O</u> <u>N</u> <u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U U U U U U U U U U U U
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P P P P P P P P P P P P
textile onion	<u>Allium textile</u>	Entire plant	D D D D D D D D D D D D
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U U U U U U U U U U U U
silverweed cinquefoil	<u>Argentina anserina</u> <u>Artemisia cana ssp. cana</u>	Entire plant	U U U U U U U U U U U U
silver sagebrush	<u>Artemisia dracunculul</u>	Entire plant	D D D D D D D D D D D D
tarragon, green sagewort	<u>Artemisia dracunculul</u>	Entire plant	U U U U U U U U U U U U
sandwort	<u>Arenaria</u>	Entire plant	U U U U U U U U U U U U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U U U U U U U U U U U U
black sagebrush	<u>Artemisia nova</u>	Entire plant	U U U U U U U U U U U U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U U U U U U U U U U U U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U U U U U U U U U U U U

big sagebrush	<u>Artemisia tridentata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
shadscale saltbush	<u>Atriplex confertifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American sloughgrass	<u>Beckmannia syzigachne</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mustard	<u>Brassica</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u>Carex aquatilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
beaked sedge	<u>Carex rostrata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
garden yellowrocket	<u>Campe stricta(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Indian paintbrush, paintbrush	<u>Castilleja</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u>Calamagrostis stricta ssp. inexpansa</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Douglas' dusty maiden	<u>Chaenactis douglasii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow rabbitbrush, green rabbitbrush, low														

rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D D D D D D D D D D D D D
water hemlock	<u>Cicuta</u>	Entire plant	T T T T T T T T T T T T T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T T T T T T T T T T T T T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	U U U U U U U U U U U U U
buttecandle, minerscandle	<u>Cryptantha celosioides</u>	Entire plant	D D D D D D D D D D D D D
miner's candle plains	<u>Cryptantha virgata</u>	Entire plant	U U U U U U U U U U U U U
springparsley	<u>Cymopterus acaulis</u>	Entire plant	U U U U U U U U U U U U U
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	P P P P P P P P P P P P P
larkspur	<u>Delphinium</u>	Entire plant	D D D D D D D D D D D D D
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U U U U U U U U U U U U U
California waterwort	<u>Elatine californica</u>	Entire plant	P P P P P P P P P P P P P
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P P P P P P P P P P P P P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U U U U U U U U U U U U U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	D D D D D D D D D D D D D
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D D D D D D D D D D D D D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	P P P P P P P P P P P P P
horsetail	<u>Equisetum</u>	Entire plant	U U U U U U U U U U U U U
fleabane	<u>Erigeron</u>	Entire plant	U U U U U U U U U U U U U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	U U U U U U U U U U U U U
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U U U U U U U U U U U U U
American mannagrass	<u>Glyceria grandis</u>	Entire plant	D D D D D D D D D D D D D

American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
spiny hopsage	<u><i>Grayia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rush	<u><i>Juncus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Utah juniper	<u><i>Juniperus osteosperma</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
licorice-root, lovage	<u><i>Ligusticum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
lupine	<u><i>Lupinus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie bluebells	<u><i>Mertensia lanceolata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's povertyweed	<u><i>Monolepis nuttalliana</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted evening-primrose	<u><i>Oenothera caespitosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
nailwort	<u><i>Paronychia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western wheatgrass	<u><i>Pascopyrum smithii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

large Indian breadroot, breadroot scurfpea beardtongue, penstemon	<u><i>Pediomelum esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
	<u><i>Penstemon</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
reed canarygrass	<u><i>Phalaris arundinacea</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
phlox	<u><i>Phlox</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
bud sagebrush, bud sagewort	<u><i>Picrothamnus desertorum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
woolly plantain, woolly Indianwheat	<u><i>Plantago patagonica</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u><i>Poa ampla(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
	<u><i>Populus deltoides ssp. monilifera</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
plains cottonwood		Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u><i>Poa juncifolia(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u><i>Poa secunda</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebunch wheatgrass	<u><i>Pseudoroegneria spicata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western buttercup	<u><i>Ranunculus occidentalis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u><i>Rhus trilobata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
wax currant	<u><i>Ribes cereum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Woods' rose	<u><i>Rosa woodsii var. woodsii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western dock	<u><i>Rumex aquaticus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
willow	<u><i>Salix</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
greasewood	<u><i>Sarcobatus vermiculatus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire plant												

bulrush	<u>Scirpus</u>		D D D D D D D D D D D D D
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P P P P P P P P P P P P P
beaked skeletonweed	<u>Shinnersoseris rostrata</u>	Entire plant	U U U U U U U U U U U U U
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D D D D D D D D D D D D D

Animal kind: All horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J F M A M J J A S O N D</u>
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	P P P P P P P P P P P P P

Animal kind: all horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J F M A M J J A S O N D</u>
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	D D D D D D D D D D D D D
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	D D D D D D D D D D D D D
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	P P P P P P P P P P P P P
desert princessplume	<u>Stanleya pinnata var. pinnata</u>	Entire plant	T T T T T T T T T T T T T
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U U U U U U U U U U U U U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U U U U U U U U U U U U U
shortspine horsebrush, spiny horsebrush	<u>Tetradymia spinosa</u>	Entire plant	U U U U U U U U U U U U U
arrowgrass	<u>Triglochin</u>	Entire plant	T T T T T T T T T T T T T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	D D D D D D D D D D D D D
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	D D D D D D D D D D D D D
American vetch	<u>Vicia americana</u>	Entire plant	P P P P P P P P P P P P P
badlands mule-ears	<u>Wyethia scabra(syn)</u>	Entire plant	U U U U U U U U U U U U U
woodyaster	<u>Xylorhiza</u>	Entire plant	T T T T T T T T T T T T T
soapweed yucca,		Entire	

small soapweed	<u><i>Yucca glauca</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u><i>Zigadenus paniculatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

Animal kind: all sheep

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>E</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silverweed cinquefoil	<u><i>Argentina anserina</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u><i>Artemisia cana ssp. cana</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u><i>Arenaria</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
black sagebrush	<u><i>Artemisia nova</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u><i>Aster</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
shadscale saltbush	<u><i>Atriplex confertifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

American sloughgrass	<u>Beckmannia syzigachne</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
mustard	<u>Brassica</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u>Carex aquatilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
beaked sedge	<u>Carex rostrata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
garden yellowrocket	<u>Campe stricta(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Indian paintbrush, paintbrush	<u>Castilleja</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u>Calamagrostis stricta ssp. inexpansa</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Douglas' dustymaiden	<u>Chaenactis douglasii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
buttecandle, minerscandle	<u>Cryptantha celosioides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
miner's candle plains	<u>Cryptantha virgata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U

springparsley	<u>Cymopterus acaulis</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
larkspur	<u>Delphinium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u>Elatine californica</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
wheatgrass, slender	<u>Elymus trachycaulus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
wheatgrass		Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
fleabane	<u>Erigeron</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American mannagrass	<u>Glyceria grandis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
spiny hopsage	<u>Grayia spinosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u>Gutierrezia sarothrae</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
rush	<u>Juncus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Utah juniper	<u>Juniperus osteosperma</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u>Krascheninnikovia</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u>Leymus cinereus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
licorice-root, lovage	<u>Ligusticum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
lupine	<u>Lupinus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
prairie bluebells	<u>Mertensia lanceolata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's povertyweed	<u>Monolepis nuttalliana</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
tufted evening-primrose	<u>Oenothera caespitosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
nailwort	<u>Paronychia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot	<u>Pediomelum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
scurfpea	<u>esculentum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
beardtongue, penstemon	<u>Penstemon</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
reed canarygrass	<u>Phalaris arundinacea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
phlox	<u>Phlox</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
bud sagebrush, bud sagewort	<u>Picrothamnus desertorum</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
woolly plantain,															

woolly Indianwheat	<u>Plantago patagonica</u>	Entire plant	U U U U U U U U U U U U
Sandberg bluegrass	<u>Poa ampla(syn)</u>	Entire plant	P P P P P P P P P P P P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D D D D D D D D D D D D
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	P P P P P P P P P P P P
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P P P P P P P P P P P P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P P P P P P P P P P P P
western buttercup	<u>Ranunculus occidentalis</u>	Entire plant	D D D D D D D D D D D D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D D D D D D D D D D D D
wax currant	<u>Ribes cereum</u>	Entire plant	U U U U U U U U U U U U
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D D D D D D D D D D D D
western dock	<u>Rumex aquaticus</u>	Entire plant	U U U U U U U U U U U U
willow	<u>Salix</u>	Entire plant	P P P P P P P P P P P P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D D D D D D D D D D D D
bulrush	<u>Scirpus</u>	Entire plant	U U U U U U U U U U U U
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P P P P P P P P P P P P
beaked skeletonweed	<u>Shinersoseris rostrata</u>	Entire plant	U U U U U U U U U U U U
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	P P P P P P P P P P P P

Animal kind: All sheep

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all sheep

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali cordgrass	<u><i>Spartina gracilis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie cordgrass	<u><i>Spartina pectinata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
desert princessplume	<u><i>Stanleya pinnata var. pinnata</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
shortspine horsebrush, spiny horsebrush	<u><i>Tetradymia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u><i>Triglochin</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
badlands mule-ears	<u><i>Wyethia scabra(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
woodyaster	<u><i>Xylorhiza</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u><i>Zigadenus paniculatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

Legend: P=Preferred; D=Desirable; U=Undesirable; N=Not consumed; E=Emergency; T=Toxic; X=Used, but degree of utilization unknown

Hydrology Functions

Water 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 ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses such as bluebunch wheatgrass. 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 variety 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

Supporting Information

Associated Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Clayey (Cy)	<u>R061XY104WY</u>	
Lowland (LL)	<u>R061XY128WY</u>	
Overflow (Ov)	<u>R061XY130WY</u>	
Sandy (Sy)	<u>R061XY150WY</u>	
Shallow Loamy (SwLy)	<u>R061XY162WY</u>	

Similar Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Loamy (Ly)	<u>R058BY222WY</u>	Loamy 15-17" Northern Plains P.Z. has lower production.

State Correlation

*This site has been correlated with the following states: **WY***

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Original Site Description Approval

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
G. Mitchell	10/31/2002	E. Bainter	3/4/2008

Reference Sheet

Author(s)/participant(s):

Contact for lead author:

Date: 4/1/2005 **MLRA:** 061X **Ecological Site:** Loamy (Ly) 15-19" Precipitation Zone, Black Hills R061XY122WY This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community cannot be used to identify the ecological site.

Composition (indicators 10 and 12) based on: X Annual Production, Foliar Cover, Biomass

Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community and natural disturbance regimes within the reference state, when appropriate and (3) cite data. Continue descriptions on separate sheet.

1. Number and extent of rills: Rills should not be present

2. Presence of water flow patterns: Barely observable

3. Number and height of erosional pedestals or terracettes: Essentially non-existent

4. Bare ground from Ecological Site Description or other studies (rock, litter, standing dead, lichen, moss, plant canopy are not bare ground): Bare ground is 15-25% occurring in small areas throughout site

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: None

7. Amount of litter movement (describe size and distance expected to travel): Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): Plant cover and litter is at 75% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.

9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness): Use Soil Series description for depth and color of A-horizon

10. Effect on plant community composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Moderate.

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 or soil surface crusting should be present.

12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to) with dominants and sub-dominants and "others" on separate lines:

Dominant:

Sub-dominant:

Other:

Additional: Mid-stature Bunch grasses > Mid-stature Rhizomatous grasses > Short stature grasses/grasslikes = Forbs > Shrubs

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Very Low

14. Average percent litter cover (%) and depth (inches): Average litter cover is 30-40% with depths of 0.25 to 1.0 inches

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 2000 lbs/ac

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 indicator, we are describing what is NOT expected in the reference state for the ecological site: Blue grama, Big sagebrush, Annual bromes, Fringed sagewort, Prickly Pear, and Species found on Noxious Weed List

17. Perennial plant reproductive capability: All species are capable of reproducing

Reference Sheet Approval

Approval
E. Bainter

Date
3/4/2008

United States Department of Agriculture Natural Resources Conservation Service Ecological Site Description

Section I: Ecological Site Characteristics

Ecological Site Identification and Concept

Site name: Shallow Loamy (ShLy) 15-19" Precipitation Zone, Black Hills

Site type: Rangeland

Site ID: R061XY1B2WY

Major land resource area (MLRA): 061-Black Hills Foot Slopes

► [Description Zones for Rangeland Ecological Site Descriptions](#)



Physiographic Features

This site occurs on steep slopes and ridge tops, but may occur on all slopes.

Landform: (1) Hill
(2) Ridge
(3) Escarpment

	<u>Minimum</u>	<u>Maximum</u>
<i>Elevation (feet):</i>	3500	5000
<i>Slope (percent):</i>	0	60
<i>Water table depth (inches):</i>	60	
<i>Flooding</i>		
<i>Frequency:</i>	None	None
<i>Ponding</i>		
<i>Depth (inches):</i>	0	0
<i>Frequency:</i>	None	None
<i>Runoff class:</i>	Negligible	High
<i>Aspect:</i>	No Influence on this site	

Climatic Features

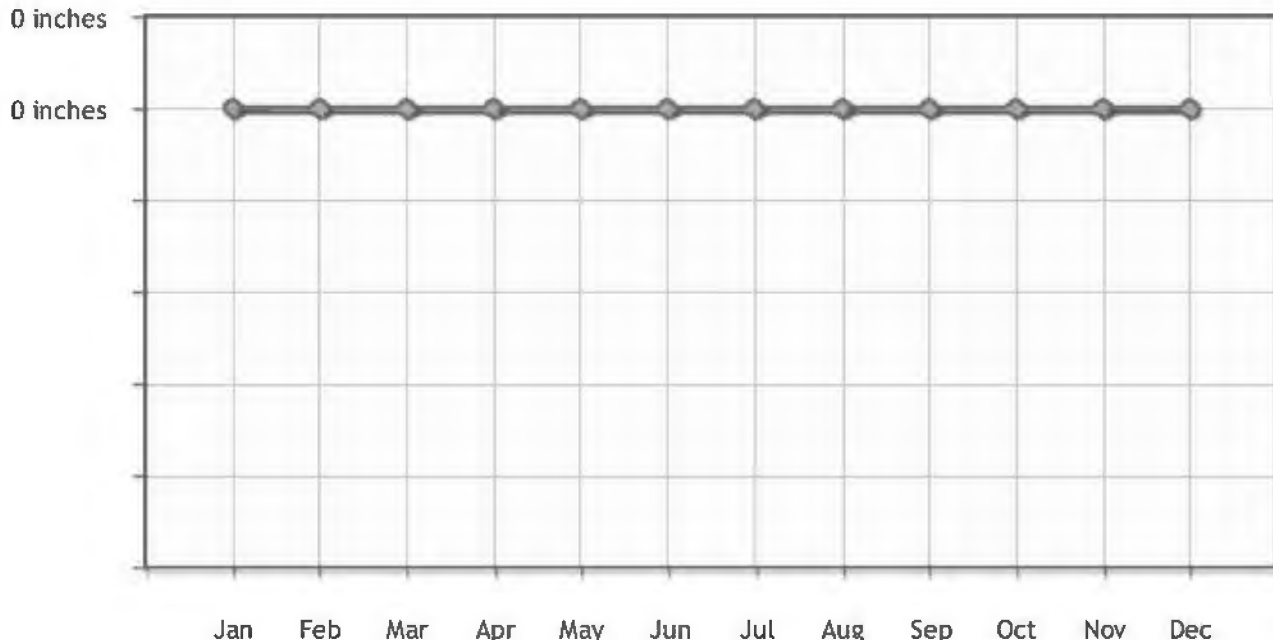
Annual precipitation ranges from 15-19 inches per year. Wide fluctuations may occur in yearly precipitation and result in more dry years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks in winter move rapidly from northwest to southeast and account for extreme minimum temperatures. Extreme storms may occur during the winter, but most severely affect ranch operations during late winter and spring. Strong winds are less frequent than over other areas of Wyoming. Occasional storms, however, can bring brief periods of high winds with gusts exceeding 50 mph. Growth of native cool season plants begins about April 1 and continues to about July 1. Native warm season plants begin about May 15 and continue to about August 15. Fall green-up may occur in September and last through October. The following information is from the "Devils Tower 2" climate station: Mean annual precipitation: 17.66 inches Mean annual air temperature: 44.4 F (28.6 F Avg. Min. to 60.1 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 "Hulett" and "Sundance".

Averaged

<i>Frost-free period (days):</i>	75
<i>Freeze-free period (days):</i>	110
<i>Mean annual precipitation (inches):</i>	20.17

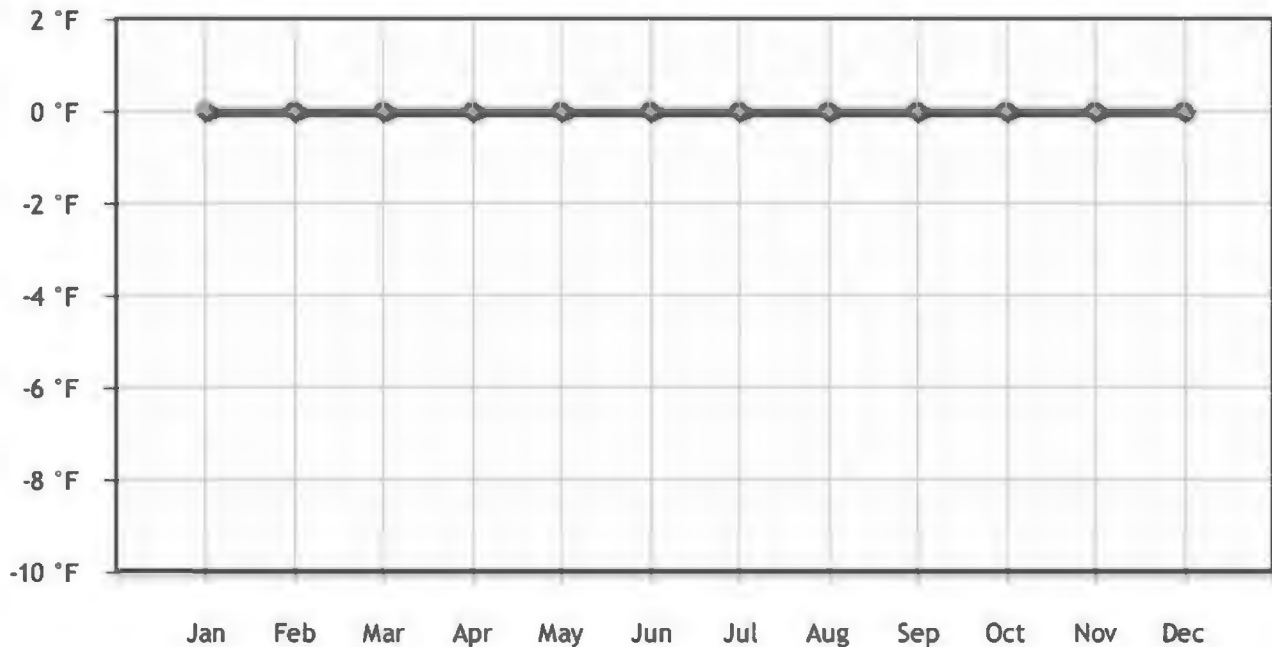
Monthly Precipitation (Inches):

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Low</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Monthly Temperature (°F):

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Low</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Influencing Water Features**

Stream Type: None

Representative Soil Features

The soils of this site are shallow (less than 20" to bedrock) well-drained soils formed in alluvium over residuum or residuum. These soils have moderate permeability and may occur on all slopes. The bedrock may be any kind which is virtually impenetrable to plant roots, except igneous. The surface soil will have one or more of the following textures: very fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, and clay loam. Thin ineffectual layers of other textures are disregarded. Layers of the soil most influential to the

plant community vary from 3 to 6 inches thick.

Surface texture: (1) Loam
(2) Silt loam
(3) Clay loam

Subsurface texture group: Loamy

	<u>Minimum</u>	<u>Maximum</u>
<i>Surface fragments <=3" (% cover):</i>	0	10
<i>Surface fragments >3" (% cover):</i>	0	20
<i>Subsurface fragments <=3" (% volume):</i>	0	15
<i>Subsurface fragments >3" (% volume):</i>	0	0
<i>Drainage class:</i> Well drained		
<i>Permeability class:</i> Moderate to moderately rapid		

	<u>Minimum</u>	<u>Maximum</u>
<i>Depth (inches):</i>	10	20
<i>Available water capacity (inches):</i>	1.10	4.20
<i>Electrical conductivity (mmhos/cm):</i>	0	4
<i>Sodium adsorption ratio:</i>	0	5
<i>Calcium carbonate equivalent (percent):</i>	0	5
<i>Soil reaction (1:1 water):</i>	6.6	8.4

Plant Communities

Ecological Dynamics of the Site

Ecological Dynamics of the Site:

As this site deteriorates, species such as blue grama and big sagebrush will increase. Grasses such as bluebunch wheatgrass, little bluestem, sideoats grama and rhizomatous wheatgrasses will decrease in frequency and production.

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.

Plant Community Narratives

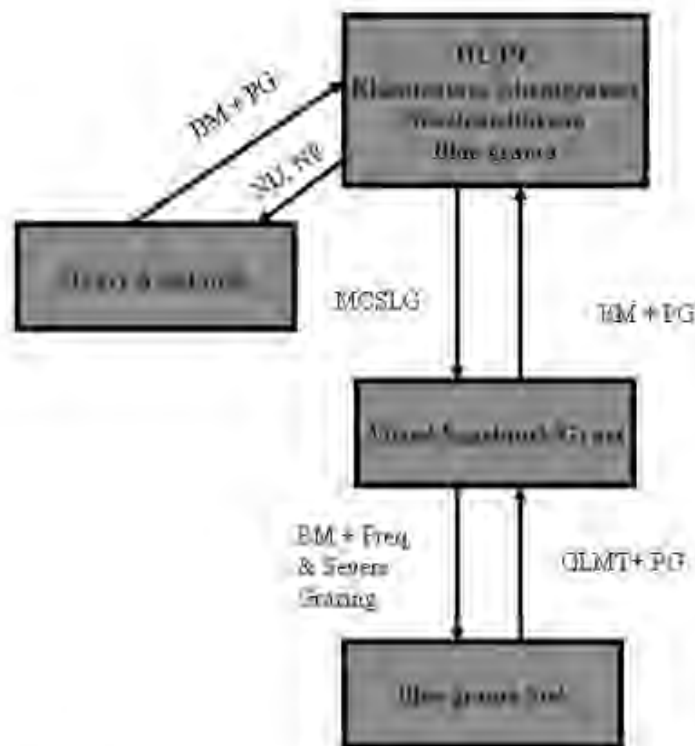
Following are the narratives for each of the described plant communities. These plant

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

State-and-Transition Diagram

Site Type: Pongelant
MLRA - 61 - Black Hills Foot Slopes

Shallow Loamy 15-19" P.Z
R061XY162WY



BM - Brush Management (fire, chemical, mechanical)

Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season

GLMT - Grazing Land Mechanical Treatment

LTPG - Long-term Prescribed Grazing

MCSLG - Moderate, Continuous Season-long Grazing

NU, NF - No Use and No Fire

PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)

VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)

Na - found adjacent to a saline site

Technical Guide
Section II E

4

USDA-NRCS
Rev 02-12-01

Rhizomatous wheatgrasses/Needleandthread/Blue grama

Rhizomatous Wheatgrasses, Needleandthread, Blue Grama Plant Community

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 80% grasses or grass-like plants, 10% forbs, and 10% woody plants. The state is dominated by cool season midgrasses. The major grasses

include little bluestem, bluebunch wheatgrass, needleandthread, sideoats grama, and western wheatgrass. Other grasses occurring on the state include Sandberg bluegrass, blue grama, plains muhly, spikefescue and prairie junegrass. Big sagebrush is a conspicuous element of this state and occurs in a mosaic pattern. Big sagebrush may become dominant on some areas with absence of fire. Natural fire occurred frequently in this community and prevented big sagebrush from being the dominant landscape. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this state. Recently controlled burning has regained some popularity.

The total annual production (air-dry weight) of this state is about 1400 pounds per acre, but it can range from about 900 lbs/acre in unfavorable years to about 1800 lbs/acre in above average years.

The state is extremely stable and well adapted to the Black Hills Foot Slopes climatic conditions. The diversity in plant species allows for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity).

Transitions or pathways leading to other plant communities are as follows:

- Protection from grazing and fire will convert this plant community to the Heavy Sagebrush Plant Community.
- Moderate, continuous season-long grazing will convert the plant community to the Mixed Sagebrush/Grass Plant Community.
- Frequent and severe grazing and brush management will convert the plant community to the Blue Grama Plant Community.

Rhizmatous wheatgrasses/Needleandthread/Blue grama Plant Species Composition

Grass/Grasslike				Annual Production (pounds per acre)		
<u>Group</u>	<u>name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
1		little bluestem	SCSC	<i>Schizachyrium scoparium</i>	140	350
2		bluebunch wheatgrass	PSSP6	<i>Pseudoroegneria spicata</i>	140	350
3		needle and thread, needleandthread	HECO26	<i>Hesperostipa comata</i>	140	210
4		western wheatgrass	PASM	<i>Pascopyrum smithii</i>	70	210
5					70	140

	spike fescue, kingspike fescue	LEKI2	<u>Leucopoa kingii</u>	70	140
6				70	140
	sideoats grama	BOCU	<u>Bouteloua curtipendula</u>	70	140
7				70	280
	Grass, perennial	2GP		0	70
	blue grama	BOGR2	<u>Bouteloua gracilis</u>	0	70
	hairy grama	BOHI2	<u>Bouteloua hirsuta</u>	0	70
	threadleaf sedge	CAFI	<u>Carex filifolia</u>	0	70
	timber oatgrass, timber danthonia	DAIN	<u>Danthonia intermedia</u>	0	70
	onespike danthonia, onespike oatgrass	DAUN	<u>Danthonia unispicata</u>	0	70
	blue wildrye	ELGL	<u>Elymus glaucus</u>	0	70
	prairie Junegrass	KOMA	<u>Koeleria macrantha</u>	0	70
	plains muhly, stoneyhills muhly	MUCU3	<u>Muhlenbergia cuspidata</u>	0	70
	fowl bluegrass	POPA2	<u>Poa palustris</u>	0	70
	Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	POSE	<u>Poa secunda</u>	0	70

				<u>Annual Production (pounds per acre)</u>	
Forb				<u>Low</u>	<u>High</u>
<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>		
8				70	210
	Forb, perennial	2FP		0	70
	bastard toadflax	COMAN	<u>Comandra</u>	0	70
	prairie clover	DALEA	<u>Dalea</u>	0	70
	sanddune wallflower, western wallflower	ERCAC	<u>Erysimum capitatum var. capitatum</u>	0	70
	fleabane	ERIGE2	<u>Erigeron</u>	0	70
	desertparsley, biscuitroot	LOMAT	<u>Lomatium</u>	0	70
	lupine	LUPIN	<u>Lupinus</u>	0	70
	bluebells	MERTE	<u>Mertensia</u>	0	70
	silverleaf Indian breadroot	PEAR6	<u>Pediomelum argophyllum</u>	0	70
	beardtongue, penstemon	PENST	<u>Penstemon</u>	0	70
	stonecrop	SEDUM	<u>Sedum</u>	0	70
	mountain goldenbanner	THMOM3	<u>Thermopsis montana var. montana</u>	0	70
	American vetch	VIAM	<u>Vicia americana</u>	0	70

Shrub/Vine				Annual Production (rounds per acre)		
Group	Group name	Common name	Symbol	Scientific name	Low	High
9		big sagebrush	ARTR2	<u><i>Artemisia tridentata</i></u>	0	70
10		skunkbush sumac	RHTR	<u><i>Rhus trilobata</i></u>	0	70
11		winterfat	KRASC	<u><i>Kraeheninnikovia</i></u>	0	70
12		Shrub (>.5m)	2SHRUB		0	70

Plant Growth Curve

Growth curve number:

WY1601

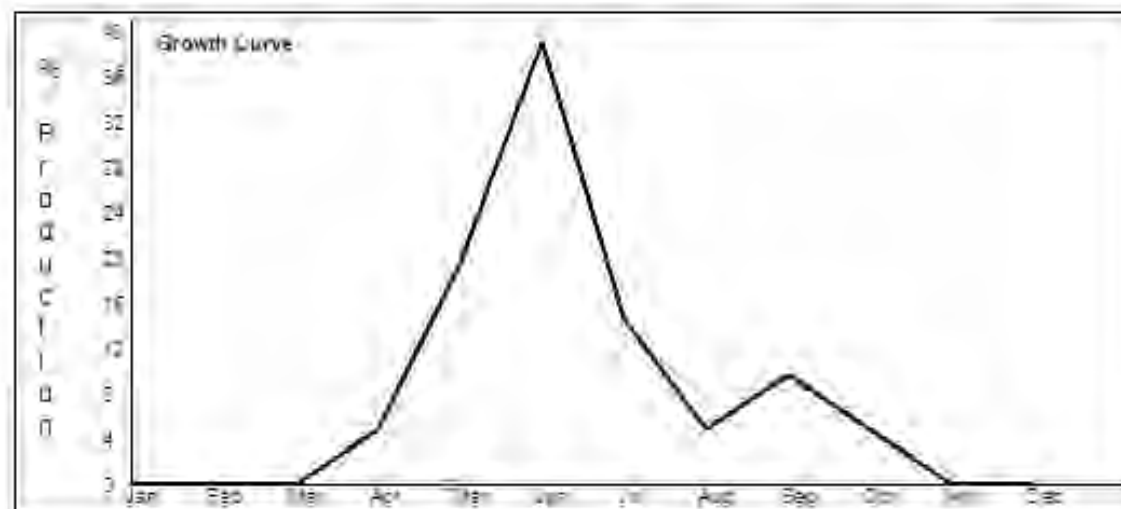
Growth curve name:

15-198L Upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	40	15	5	10	5	0	0



Heavy Sagebrush

Heavy Sagebrush Plant Community

This plant community is the result of protection from grazing and fire. Big sagebrush dominates this plant community with canopy cover often exceeding 50%. The understory of grass includes rhizomatous wheatgrasses, bluebunch wheatgrass, little bluestem, Sandberg bluegrass, and prairie junegrass. With complete protection from grazing and fire, the state will become dominated by big sagebrush. The big sagebrush canopy protects the cool season grasses, but this protection makes them unavailable for grazing. Big sagebrush is long-lived and will persist for a long period.

This plant community can provide valuable winter feed for both livestock (especially sheep) and wildlife (such as mule deer and antelope).

The total annual production (air-dry weight) of this state is about 1000 pounds per acre, but it can range from about 800 lbs/acre in unfavorable years to about 1200 lbs/acre in above average years.

The soil resources of this state are protected from erosion. The watershed is functioning. The biotic community is intact except that grass production is lowered.

Transitional pathways leading to other plant communities are as follows:

- Brush control followed by deferment for 1 to 2 years and prescribed grazing management thereafter will return this state to near Historic Climax Plant Community. Care should be taken when planning brush control to exclude critical winter ranges.

Plant Growth Curve

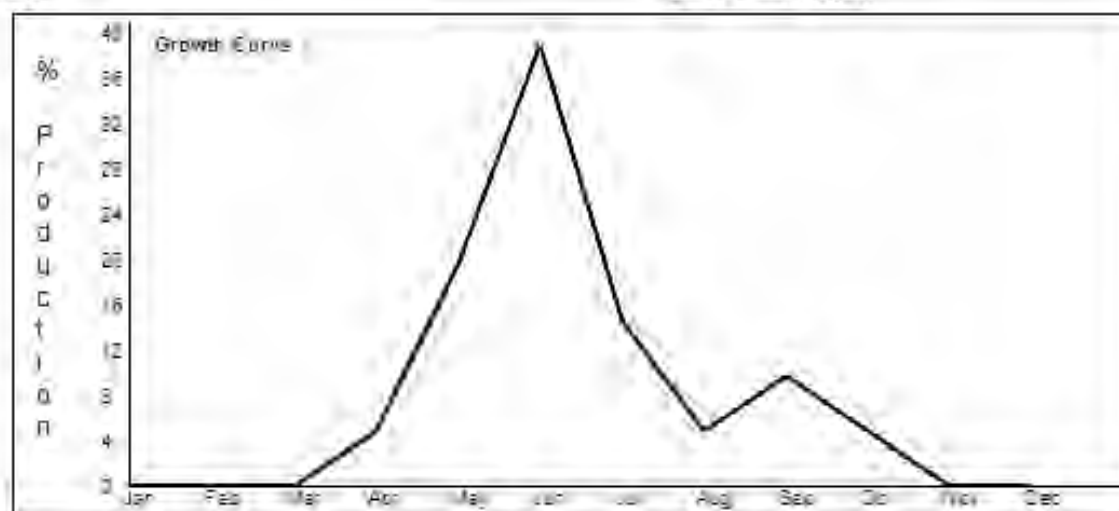
Growth curve number: WY1601

Growth curve name: 15-19BL Upland sites

Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	5	20	40	15	5	10	5	0	0



Mixed Sagebrush/Grass

Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush control. Wyoming big sagebrush is a significant component of this plant community. Cool-season grasses make up the majority of the understorey with the balance made up of short warm-season grasses, annual cool-season grass, and miscellaneous forbs.

Dominant grasses include bluebunch wheatgrass, rhizomatous wheatgrasses, little bluestem, sideoats grama, and blue grama. Grasses of secondary importance include prairie junegrass, and Sandberg bluegrass. Forbs, commonly found in this plant community, include Louisiana sagewort (cudweed), plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Big sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear and winterfat can also occur.

When compared to the Historical Climax Plant Community, big sagebrush and blue grama have increased. Bluebunch wheatgrass has decreased, often occurring only where protected from grazing by the sagebrush canopy. Production of cool-season grasses has also been reduced. Cheatgrass (downy brome) has invaded the state. The overstorey of big sagebrush and understorey of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

The total annual production (air-dry weight) of this state is about 1000 pounds per acre, but it can range from about 800 lbs./acre in unfavorable years to about 1200 lbs./acre in above average years.

The state is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. However, it can be at risk depending on how far a shift has occurred in plant composition toward blue grama, sagebrush, and/or cheatgrass. The watershed is usually functioning. However, it can become at risk when canopy cover of sagebrush, blue grama sod, and/or bare ground increases.

Transitional pathways leading to other plant communities are as follows:

- Brush management followed by 1 or 2 years deferment and prescribed grazing use will

return this state to near Historic Climax Plant Community.

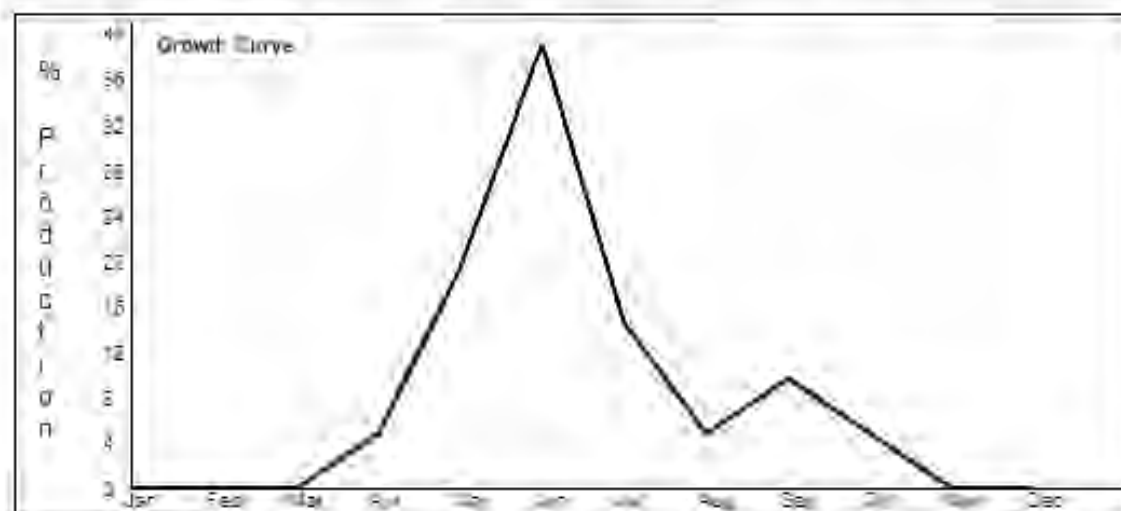
- Frequent and severe grazing and brush management will convert this state to the Blue grama sod Plant Community.

Plant Growth Curve

Growth curve number: WY1601
 Growth curve name: 15-19BL Upland sites
 Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	40	15	5	10	5	0	0



Blue grama Sod

Blue Grama Sod Plant Community

This plant community is the result of long-term, heavy, continuous, season-long grazing. A dense sod of blue grama and threadleaf sedge dominates and covers up to 90% of the soil surface. When the historic climax community is replaced by warm season dominated communities, grass production is reduced.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 600 lbs/acre in unfavorable years to about 1000 lbs/acre in above average years.

The sod formed by these grasses is resistant to water infiltration. While this sod protects the

state, off-site areas are affected by excessive runoff that may cause gully erosion. This sod is resistant to change and may require practices such as grazing land mechanical treatment to return to a cool season grass community. Transitional pathways leading to other plant communities are as follows:

Transitional pathways leading to other plant communities are as follows:

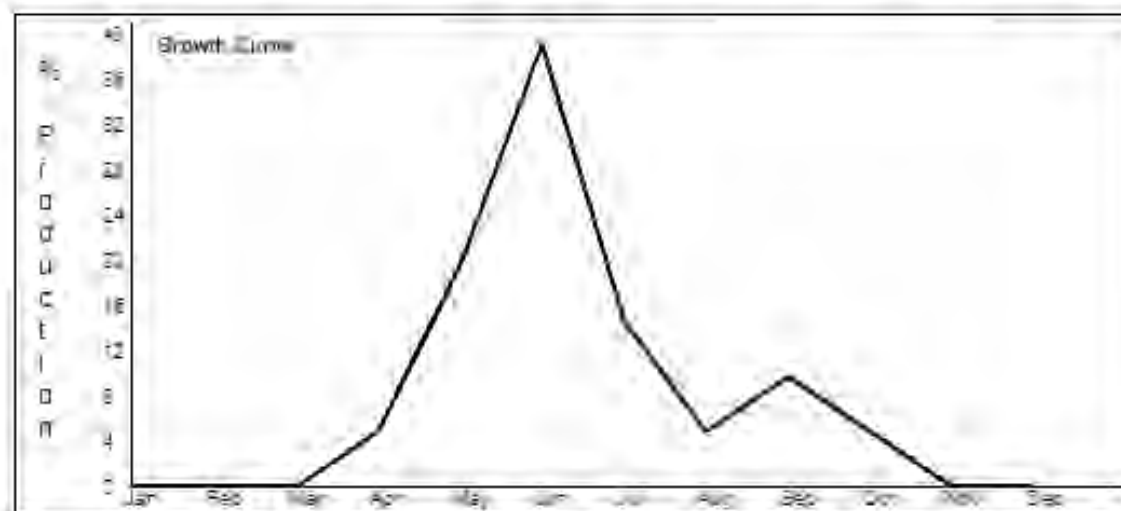
- Grazing Land Mechanical Treatment (chiseling, etc.) followed by prescribed grazing will return this plant community to near Historic Climax Plant Community.

Plant Growth Curve

Growth curve number: WY1601
Growth curve name: 15-198L Upland sites
Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	20	40	15	5	10	5	0	0



Section II: Ecological Site Interpretations

Animal Community

Animal Community – Wildlife Interpretations

Historic Climax 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. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Heavy Sagebrush: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community can provide nesting and brood rearing habitat for sage grouse.

Mixed Sagebrush/Grass: The combination of an overstory of sagebrush and an understory of grasses and forbs provide a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows' nest in big sagebrush plants, and hosts of other nesting birds utilize stands in the 20-30% cover range.

Blue Grama Sod: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Mixed Sagebrush/Grass Plant Community is limiting. Generally, these are not target plant communities for wildlife habitat management.

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*
(Lbs/acre) (AUM/ac)
Historic Climax Plant Community 900-1800 .35

Heavy Sagebrush 800-1200 .25
 Mixed Sagebrush/Grass 800-1200 .25
 Blue Grama Sod 600-1000 .15

* - 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.

Plant Preference by Animal Kind

Animal kind: all antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silverweed cinquefoil	<u><i>Argentina anserina</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u><i>Artemisia cana ssp. cana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u><i>Arenaria</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
black sagebrush	<u><i>Artemisia nova</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush twogrooved	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

milkvetch	<u><i>Astragalus bisulcatus</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
		Entire												
aster	<u><i>Aster</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
milkvetch	<u><i>Astragalus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
fourwing saltbush	<u><i>Atriplex canescens</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
shadscale saltbush	<u><i>Atriplex confertifolia</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
American sloughgrass	<u><i>Beckmannia syzigachne</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
blue grama	<u><i>Bouteloua gracilis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
mustard	<u><i>Brassica</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
water sedge	<u><i>Carex aquatilis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
threadleaf sedge	<u><i>Carex filifolia</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
spike sedge	<u><i>Carex nardina</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
beaked sedge	<u><i>Carex rostrata</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
garden yellowrocket	<u><i>Campe stricta(syn)</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Indian paintbrush, paintbrush	<u><i>Castilleja</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
northern reedgrass	<u><i>Calamagrostis stricta ssp. inexpansa</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Douglas' dustymaiden	<u><i>Chaenactis douglasii</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												

water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
buttecandle, minerscandle	<u>Cryptantha celosioides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
miner's candle plains	<u>Cryptantha virgata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
springparsley	<u>Cymopterus acaulis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
larkspur	<u>Delphinium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u>Elatine californica</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
fleabane	<u>Erigeron</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
American mannagrass	<u>Glyceria grandis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U

spiny hopsage	<u>Grayia spinosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u>Gutierrezia sarothrae</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rush	<u>Juncus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Utah juniper	<u>Juniperus osteosperma</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u>Krascheninnikovia</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u>Leymus cinereus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
licorice-root, lovage	<u>Ligusticum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
lupine	<u>Lupinus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie bluebells	<u>Mertensia lanceolata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's povertyweed	<u>Monolepis nuttalliana</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted evening-primrose	<u>Oenothera caespitosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
nailwort	<u>Paronychia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian														

breadroot, breadroot scurfpea	<u><i>Pediomelum esculentum</i></u>	Entire plant	D D D D D D D D D D D D D
beardtongue, penstemon	<u><i>Penstemon</i></u>	Entire plant	P P P P P P P P P P P P P
reed canarygrass	<u><i>Phalaris arundinacea</i></u>	Entire plant	U U U U U U U U U U U U U
phlox	<u><i>Phlox</i></u>	Entire plant	U U U U U U U U U U U U U
bud sagebrush, bud sagewort	<u><i>Picrothamnus desertorum</i></u>	Entire plant	P P P P P P P P P P P P P
woolly plantain, woolly Indianwheat	<u><i>Plantago patagonica</i></u>	Entire plant	U U U U U U U U U U U U U
Sandberg bluegrass	<u><i>Poa ampla(syn) Populus deltoides ssp. monilifera</i></u>	Entire plant	P P P P P P P P P P P P P
plains cottonwood		Entire plant	D D D D D D D D D D D D D
Sandberg bluegrass	<u><i>Poa juncifolia(syn)</i></u>	Entire plant	P P P P P P P P P P P P P
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u><i>Poa secunda</i></u>	Entire plant	D D D D D D D D D D D D D
bluebunch wheatgrass	<u><i>Pseudoroegneria spicata</i></u>	Entire plant	D D D D D D D D D D D D D
Nuttall's alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	Entire plant	P P P P P P P P P P P P P
western buttercup	<u><i>Ranunculus occidentalis</i></u>	Entire plant	D D D D D D D D D D D D D
skunkbush sumac	<u><i>Rhus trilobata</i></u>	Entire plant	D D D D D D D D D D D D D
wax currant	<u><i>Ribes cereum</i></u>	Entire plant	D D D D D D D D D D D D D
Woods' rose	<u><i>Rosa woodsii var. woodsii</i></u>	Entire plant	D D D D D D D D D D D D D
western dock	<u><i>Rumex aquaticus</i></u>	Entire plant	U U U U U U U U U U U U U
willow	<u><i>Salix</i></u>	Entire plant	U U U U U U U U U U U U U
greasewood	<u><i>Sarcobatus vermiculatus</i></u>	Entire plant	D D D D D D D D D D D D D
bulrush	<u><i>Scirpus</i></u>	Entire plant	U U U U U U U U U U U U U

little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
beaked skeletonweed	<u>Shinnersoseris rostrata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	F	M	A	M	J	J	A	S	O	N	D
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	F	M	A	M	J	J	A	S	O	N	D
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desert princesplume	<u>Stanleya pinnata var. pinnata</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
shortspine horsebrush, spiny horsebrush	<u>Tetradymia spinosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
badlands mule-ears	<u>Wyethia scabra(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
woodyaster	<u>Xylorhiza</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca,		Entire												

small soapweed	<u>Yucca glauca</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u>Zigadenus paniculatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silverweed cinquefoil	<u>Argentina anserina</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u>Arenaria</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
black sagebrush	<u>Artemisia nova</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
shadscale saltbush	<u>Atriplex confertifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

American sloughgrass	<u>Beckmannia syzigachne</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mustard	<u>Brassica</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u>Carex aquatilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
beaked sedge	<u>Carex rostrata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
garden yellowrocket	<u>Campe stricta(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Indian paintbrush, paintbrush	<u>Castilleja</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u>Calamagrostis stricta ssp. inexpansa</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Douglas' dusty maiden	<u>Chaenactis douglasii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
buttecandle, minerscandle	<u>Cryptantha celosioides</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
miner's candle	<u>Cryptantha virgata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
plains		Entire												

springparsley	<u>Cymopterus acaulis</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
larkspur	<u>Delphinium</u>	Entire plant	U	D	D	D	D	D	D	D	U	D	D	D
California waterwort	<u>Elatine californica</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	P	P	D	P	P	P	P	P	P	P	P	P
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
fleabane	<u>Erigeron</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
spiny hopsage	<u>Grayia spinosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u>Gutierrezia sarothrae</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rush	<u>Juncus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Utah juniper	<u><i>Juniperus osteosperma</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
licorice-root, lovage	<u><i>Ligusticum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
lupine	<u><i>Lupinus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
prairie bluebells	<u><i>Mertensia lanceolata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's povertyweed	<u><i>Monolepis nuttalliana</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
tufted evening-primrose	<u><i>Oenothera caespitosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
nailwort	<u><i>Paronychia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
western wheatgrass	<u><i>Pascopyrum smithii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot	<u><i>Pediomelum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
scurfpea	<u><i>esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
beardtongue, penstemon	<u><i>Penstemon</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
reed canarygrass	<u><i>Phalaris arundinacea</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
phlox	<u><i>Phlox</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
bud sagebrush, bud sagewort	<u><i>Picrothamnus desertorum</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
woolly plantain, woolly Indianwheat	<u><i>Plantago patagonica</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u><i>Poa ampla(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
	<u><i>Populus deltoides ssp.</i></u>	Entire													

plains cottonwood	<u>monilifera</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western buttercup	<u>Ranunculus occidentalis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
wax currant	<u>Ribes cereum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
western dock	<u>Rumex aquaticus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bulrush	<u>Scirpus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
beaked skeletonweed	<u>Shinnersoseris rostrata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	E	M	A	M	J	J	A	S	O	N	D
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	E	M	A	M	J	J	A	S	O	N	D
		Entire												

sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D	D
		Entire													
alkali cordgrass	<u><i>Spartina gracilis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D	D
		Entire													
prairie cordgrass	<u><i>Spartina pectinata</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P	P
desert	<u><i>Stanleya pinnata var.</i></u>	Entire													
princesplume	<u><i>pinnata</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T	T
		Entire													
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U	U
western	<u><i>Symphoricarpos</i></u>	Entire													
snowberry	<u><i>occidentalis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U	U
shortspine															
horsebrush, spiny		Entire													
horsebrush	<u><i>Tetradymia spinosa</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U	U
		Entire													
arrowgrass	<u><i>Triglochin</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T	T
		Entire													
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D	D
		Entire													
broadleaf cattail	<u><i>Typha latifolia</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D	D
		Entire													
American vetch	<u><i>Vicia americana</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P	P
badlands mule-		Entire													
ears	<u><i>Wyethia scabra(syn)</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D	D
		Entire													
woodyaster	<u><i>Xylorhiza</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca,		Entire													
small soapweed	<u><i>Yucca glauca</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D	D
foothill		Entire													
deathcamas	<u><i>Zigadenus paniculatus</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T	T

Animal kind: all deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>E</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silverweed cinquefoil	<u><i>Argentina anserina</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u>Arenaria</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
shadscale saltbush	<u>Atriplex confertifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
American sloughgrass	<u>Beckmannia syzigachne</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mustard	<u>Brassica</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u>Carex aquatilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

beaked sedge	<u>Carex rostrata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
garden yellowrocket	<u>Campe stricta(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian paintbrush, paintbrush	<u>Castilleja</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u>Calamagrostis stricta ssp. inexpansa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Douglas' dusty maiden	<u>Chaenactis douglasii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buttecandle, minerscandle	<u>Cryptantha celosioides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
miner's candle	<u>Cryptantha virgata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
plains springparsley	<u>Cymopterus acaulis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
larkspur	<u>Delphinium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u>Elatine californica</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
silverberry	<u>Elaeagnus commutata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
squirreltail, bottlebrush	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail streambank wheatgrass, thickspike	<u>Elymus lanceolatus ssp.</u>	Entire												

wheatgrass	<u><i>lanceolatus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
slender		Entire												
wheatgrass	<u><i>Elymus trachycaulus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
horsetail	<u><i>Equisetum</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
fleabane	<u><i>Erigeron</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower		Entire												
buckwheat	<u><i>Eriogonum umbellatum</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
American		Entire												
mannagrass	<u><i>Glyceria grandis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
spiny hopsage	<u><i>Grayia spinosa</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock	<u><i>Haplopappus</i></u>	Entire												
goldenweed	<u><i>acaulis(syn)</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and														
thread,		Entire												
needleandthread	<u><i>Hesperostipa comata</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
iris	<u><i>Iris</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
rush	<u><i>Juncus</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Utah juniper	<u><i>Juniperus osteosperma</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain		Entire												
juniper	<u><i>Juniperus scopulorum</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
winterfat	<u><i>Krascheninnikovia</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
basin wildrye	<u><i>Leymus cinereus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
licorice-root,		Entire												
lovage	<u><i>Ligusticum</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley,		Entire												
biscuitroot	<u><i>Lomatium</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D

lupine	<u>Lupinus</u>	Entire plant	D D D D D D D D D D D D D
prairie bluebells	<u>Mertensia lanceolata</u>	Entire plant	D D D D D D D D D D D D D
Nuttall's povertyweed	<u>Monolepis nuttalliana</u>	Entire plant	U U U U U U U U U U U U U
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U U U U U U U U U U U U U
tufted evening-primrose	<u>Oenothera caespitosa</u>	Entire plant	U U U U U U U U U U U U U
nailwort	<u>Paronychia</u>	Entire plant	U U U U U U U U U U U U U
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D D D D D D D D D D D D D
large Indian breadroot, breadroot	<u>Pediomelum esculentum</u>	Entire plant	D D D D D D D D D D D D D
scurfpea			
beardtongue, penstemon	<u>Penstemon</u>	Entire plant	P P P P P P P P P P P P P
reed canarygrass	<u>Phalaris arundinacea</u>	Entire plant	U U U U U U U U U U U U U
phlox	<u>Phlox</u>	Entire plant	U U U U U U U U U U U U U
bud sagebrush, bud sagewort	<u>Picrothamnus desertorum</u>	Entire plant	P P P P P P P P P P P P P
woolly plantain, woolly Indianwheat	<u>Plantago patagonica</u>	Entire plant	U U U U U U U U U U U U U
Sandberg bluegrass	<u>Poa ampla(syn)</u>	Entire plant	P P P P P P P P P P P P P
	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D D D D D D D D D D D D D
plains cottonwood			
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	P P P P P P P P P P P P P
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D D
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	P P P P P P P P P P P P P
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	D D D D D D D D D D D D D
Nuttall's		Entire	

alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
western buttercup	<u><i>Ranunculus occidentalis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
skunkbush sumac	<u><i>Rhus trilobata</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
wax currant	<u><i>Ribes cereum</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
Woods' rose	<u><i>Rosa woodsii var. woodsii</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
western dock	<u><i>Rumex aquaticus</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
willow	<u><i>Salix</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
greasewood	<u><i>Sarcobatus vermiculatus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
bulrush	<u><i>Scirpus</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
little bluestem	<u><i>Schizachyrium scoparium</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
beaked skeletonweed	<u><i>Shinnersoseris rostrata</i></u>	plant												
		Entire	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
blue-eyed grass	<u><i>Sisyrinchium</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
		Entire												
alkali sacaton	<u><i>Sporobolus airoides</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
		Entire												
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
alkali cordgrass	<u><i>Spartina gracilis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
prairie cordgrass	<u><i>Spartina pectinata</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
desert princesplume	<u><i>Stanleya pinnata var. pinnata</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
		Entire												
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
western	<u><i>Symphoricarpos</i></u>	Entire												

snowberry	<u>occidentalis</u>	plant	D	D	D	D	D	D	D	D	D	D	D
shortspine horsebrush, spiny horsebrush	<u>Tetradymia spinosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
badlands mule-ears	<u>Wyethia scabra(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
woodyaster	<u>Xylorhiza</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u>Zigadenus paniculatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T

Animal kind: all horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	F	M	A	M	J	J	A	S	O	N	D
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silverweed cinquefoil	<u>Argentina anserina</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u>Arenaria</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
black sagebrush	<u>Artemisia nova</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u><i>Aster</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
shadscale saltbush	<u><i>Atriplex confertifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American sloughgrass	<u><i>Beckmannia syzigachne</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mustard	<u><i>Brassica</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u><i>Carex aquatilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
threadleaf sedge	<u><i>Carex filifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
beaked sedge	<u><i>Carex rostrata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
garden yellowrocket	<u><i>Campe stricta(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Indian paintbrush, paintbrush	<u><i>Castilleja</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u><i>Calamagrostis stricta ssp. inexpansa</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Douglas' dustymaiden yellow	<u><i>Chaenactis douglasii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

rabbitbrush, green																				
rabbitbrush, low																				
rabbitbrush, Douglas rabbitbrush	<u>Chrysothamnus</u> <u>viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
buttecandle, minerscandle	<u>Cryptantha celosioides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
miner's candle plains	<u>Cryptantha virgata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
springparsley	<u>Cymopterus acaulis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
tufted hairgrass	<u>Deschampsia</u> <u>caespitosa(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
larkspur	<u>Delphinium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u>Elatine californica</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp.</u> <u>elymoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp.</u> <u>lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
fleabane	<u>Erigeron</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

American mannagrass	<u><i>Glyceria grandis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
spiny hopsage	<u><i>Grayia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rush	<u><i>Juncus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Utah juniper	<u><i>Juniperus osteosperma</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
licorice-root, lovage	<u><i>Ligusticum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
lupine	<u><i>Lupinus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie bluebells	<u><i>Mertensia lanceolata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's povertyweed	<u><i>Monolepis nuttalliana</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tufted evening- primrose	<u><i>Oenothera caespitosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
nailwort	<u><i>Paronychia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D D D D D D D D D D D D D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D D D D D D D D D D D D D
beardtongue, penstemon	<u>Penstemon</u>	Entire plant	P P P P P P P P P P P P P
reed canarygrass	<u>Phalaris arundinacea</u>	Entire plant	D D D D D D D D D D D D D
phlox	<u>Phlox</u>	Entire plant	U U U U U U U U U U U U U
bud sagebrush, bud sagewort	<u>Picrothamnus desertorum</u>	Entire plant	D D D D D D D D D D D D D
woolly plantain, woolly Indianwheat	<u>Plantago patagonica</u>	Entire plant	U U U U U U U U U U U U U
Sandberg bluegrass	<u>Poa ampla(syn)</u>	Entire plant	P P P P P P P P P P P P P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D D D D D D D D D D D D D
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	D D D D D D D D D D D D D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P P P P P P P P P P P P P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P P P P P P P P P P P P P
western buttercup	<u>Ranunculus occidentalis</u>	Entire plant	D D D D D D D D D D D D D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D D D D D D D D D D D D D
wax currant	<u>Ribes cereum</u>	Entire plant	U U U U U U U U U U U U U
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	U U U U U U U U U U U U U
western dock	<u>Rumex aquaticus</u>	Entire plant	U U U U U U U U U U U U U
willow	<u>Salix</u> <u>Sarcobatus</u>	Entire plant	D D D D D D D D D D D D D

greasewood	<u><i>vermiculatus</i></u>	plant	U U U U U U U U U U U U U
bulrush	<u><i>Scirpus</i></u>	Entire plant	D D D D D D D D D D D D D
little bluestem	<u><i>Schizachyrium scoparium</i></u>	Entire plant	P P P P P P P P P P P P P
beaked skeletonweed	<u><i>Shinnersoseris rostrata</i></u>	Entire plant	U U U U U U U U U U U U U
blue-eyed grass	<u><i>Sisyrinchium</i></u>	Entire plant	D D D D D D D D D D D D D

Animal kind: All horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	
alkali sacaton	<u><i>Sporobolus airoides</i></u>	Entire plant	J E M A M J J A S O N D P P P P P P P P P P P P P

Animal kind: all horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Entire plant	J E M A M J J A S O N D D D D D D D D D D D D D D
alkali cordgrass	<u><i>Spartina gracilis</i></u>	Entire plant	D D D D D D D D D D D D D
prairie cordgrass	<u><i>Spartina pectinata</i></u>	Entire plant	P P P P P P P P P P P P P
desert princesplume	<u><i>Stanleya pinnata var. pinnata</i></u>	Entire plant	T T T T T T T T T T T T T
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U U U U U U U U U U U U U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U U U U U U U U U U U U U
shortspine horsebrush, spiny horsebrush	<u><i>Tetradymia spinosa</i></u>	Entire plant	U U U U U U U U U U U U U
arrowgrass	<u><i>Triglochin</i></u>	Entire plant	T T T T T T T T T T T T T
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	D D D D D D D D D D D D D
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	D D D D D D D D D D D D D
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P P P P P P P P P P P P P
badlands mule-ears	<u><i>Wyethia scabra(syn)</i></u>	Entire plant	U U U U U U U U U U U U U

woodyaster	<u><i>Xylorhiza</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u><i>Zigadenus paniculatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

Animal kind: all sheep

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	F	M	A	M	J	J	A	S	O	N	D
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silverweed	<u><i>Argentina anserina</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
cinquefoil	<u><i>Artemisia cana ssp. cana</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
silver sagebrush	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sandwort	<u><i>Arenaria</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
black sagebrush	<u><i>Artemisia nova</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u><i>Aster</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
shadscale		Entire												

saltbush	<u><i>Atriplex confertifolia</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
American sloughgrass	<u><i>Beckmannia syzigachne</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mustard	<u><i>Brassica</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
water sedge	<u><i>Carex aquatilis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u><i>Carex filifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
beaked sedge	<u><i>Carex rostrata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
garden yellowrocket	<u><i>Campe stricta(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Indian paintbrush, paintbrush	<u><i>Castilleja</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u><i>Calamagrostis stricta ssp. inexpansa</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Douglas' dustymaiden	<u><i>Chaenactis douglasii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u><i>Conium maculatum</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u><i>Crepis acuminata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
buttecandle, minerscandle	<u><i>Cryptantha celosioides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

miner's candle	<u><i>Cryptantha virgata</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
plains		Entire												
springparsley	<u><i>Cymopterus acaulis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u><i>Deschampsia</i></u>	Entire												
tufted hairgrass	<u><i>caespitosa(syn)</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
larkspur	<u><i>Delphinium</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
inland saltgrass	<u><i>Distichlis spicata</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
California		Entire												
waterwort	<u><i>Elatine californica</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
Canada wildrye	<u><i>Elymus canadensis</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
silverberry	<u><i>Elaeagnus commutata</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail,		Entire												
bottlebrush	<u><i>Elymus elymoides ssp.</i></u>	Entire												
squirreltail	<u><i>elymoides</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank														
wheatgrass,														
thickspike	<u><i>Elymus lanceolatus ssp.</i></u>	Entire												
wheatgrass	<u><i>lanceolatus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
slender		Entire												
wheatgrass	<u><i>Elymus trachycaulus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
horsetail	<u><i>Equisetum</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
fleabane	<u><i>Erigeron</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower		Entire												
buckwheat	<u><i>Eriogonum umbellatum</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
American		Entire												
mannagrass	<u><i>Glyceria grandis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
spiny hopsage	<u><i>Grayia spinosa</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
broom snakeweed	<u><i>Gutierrezia sarothrae</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock	<u><i>Haplopappus</i></u>	Entire												
goldenweed	<u><i>acaulis(syn)</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and														
thread,		Entire												
needleandthread	<u><i>Hesperostipa comata</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P

iris	<u>Iris</u>	Entire plant	U U U U U U U U U U U U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	U U U U U U U U U U U U
rush	<u>Juncus</u>	Entire plant	U U U U U U U U U U U U
Utah juniper	<u>Juniperus osteosperma</u>	Entire plant	U U U U U U U U U U U U
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U U U U U U U U U U U U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D D D D D D D D D D D D
winterfat	<u>Krascheninnikovia</u>	Entire plant	P P P P P P P P P P P P
basin wildrye	<u>Leymus cinereus</u>	Entire plant	P P P P P P P P P P P P
licorice-root, lovage	<u>Ligusticum</u>	Entire plant	U U U U U U U U U U U U
desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	D D D D D D D D D D D D
lupine	<u>Lupinus</u>	Entire plant	T T T T T T T T T T T T
prairie bluebells	<u>Mertensia lanceolata</u>	Entire plant	P P P P P P P P P P P P
Nuttall's povertyweed	<u>Monolepis nuttalliana</u>	Entire plant	U U U U U U U U U U U U
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U U U U U U U U U U U U
tufted evening-primrose	<u>Oenothera caespitosa</u>	Entire plant	U U U U U U U U U U U U
nailwort	<u>Paronychia</u>	Entire plant	U U U U U U U U U U U U
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D D D D D D D D D D D D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D D D D D D D D D D D D
beardtongue, penstemon	<u>Penstemon</u>	Entire plant	P P P P P P P P P P P P
reed canarygrass	<u>Phalaris arundinacea</u>	Entire plant	U U U U U U U U U U U U
phlox	<u>Phlox</u>	Entire plant	U U U U U U U U U U U U
bud sagebrush, bud sagewort	<u>Picrothamnus desertorum</u>	Entire plant	P P P P P P P P P P P P

woolly plantain, woolly Indianwheat	<u>Plantago patagonica</u>	Entire plant	U U U U U U U U U U U U
Sandberg bluegrass	<u>Poa ampla(syn)</u>	Entire plant	P P P P P P P P P P P P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D D D D D D D D D D D D
Sandberg bluegrass	<u>Poa juncifolia(syn)</u>	Entire plant	P P P P P P P P P P P P
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P P P P P P P P P P P P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P P P P P P P P P P P P
western buttercup	<u>Ranunculus occidentalis</u>	Entire plant	D D D D D D D D D D D D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D D D D D D D D D D D D
wax currant	<u>Ribes cereum</u>	Entire plant	U U U U U U U U U U U U
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D D D D D D D D D D D D
western dock	<u>Rumex aquaticus</u>	Entire plant	U U U U U U U U U U U U
willow	<u>Salix</u>	Entire plant	P P P P P P P P P P P P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D D D D D D D D D D D D
bulrush	<u>Scirpus</u>	Entire plant	U U U U U U U U U U U U
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P P P P P P P P P P P P
beaked skeletonweed	<u>Shinnersoseris rostrata</u>	Entire plant	U U U U U U U U U U U U
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	P P P P P P P P P P P P

Animal kind: All sheep

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J E M A M J J A S O N D
		Entire	

alkali sacaton	<u><i>Sporobolus airoides</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
Animal kind: all sheep														
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali cordgrass	<u><i>Spartina gracilis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie cordgrass	<u><i>Spartina pectinata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
desert princesplume	<u><i>Stanleya pinnata var. pinnata</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
shortspine horsebrush, spiny horsebrush	<u><i>Tetradymia spinosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u><i>Triglochin</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
badlands mule-ears	<u><i>Wyethia scabra(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
woodyaster	<u><i>Xylorhiza</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
foothill deathcamas	<u><i>Zigadenus paniculatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

Legend: P=Preferred; D=Desirable; U=Undesirable; N=Not consumed; E=Emergency; T=Toxic; X=Used, but degree of utilization unknown

Hydrology Functions

Water 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 ranges from moderate to moderately rapid. Runoff potential for this site varies from moderate to high depending on soil hydrologic group and ground cover. In many cases,

areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses such as bluebunch wheatgrass. 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

Supporting Information

Associated Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Shallow Clayey (SwCy)	<u>R061XY158WY</u>	

Similar Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Shallow Loamy (SwLy)	<u>R058BY262WY</u>	Shallow Loamy 15-17" Northern Plains P.Z. has lower production.

State Correlation

*This site has been correlated with the following states: **WY***

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel were also used. Other sources used as references include: USDA NRCS Water and Climate Center, USDA NRCS National

Range and Pasture Handbook, and USDA NRCS Soil Surveys from various counties.

Original Site Description Approval

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
G. Mitchell	10/31/2002	E. Bainter	3/5/2008

Reference Sheet

Author(s)/participant(s):

Contact for lead author:

Date: 4/1/2005 **MLRA:** 061X **Ecological Site:** Shallow Loamy (SwLy)
 15-19" Precipitation Zone, Black Hills R061XY162WY This *must* be verified based on
 soils and climate (see Ecological Site Description). Current plant community cannot be
 used to identify the ecological site.

Composition (indicators 10 and 12) based on: X Annual Production, Foliar
 Cover, Biomass

Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community and natural disturbance regimes within the reference state, when appropriate and (3) cite data. Continue descriptions on separate sheet.

1. Number and extent of rills: Rills should not be present

2. Presence of water flow patterns: Barely observable

3. Number and height of erosional pedestals or terracettes: Essentially non-existent

4. Bare ground from Ecological Site Description or other studies (rock, litter, standing dead, lichen, moss, plant canopy are not bare ground): Bare ground is 45-55% occurring in small areas throughout site

-
5. **Number of gullies and erosion associated with gullies:** Active gullies should be restricted to areas of concentrated water flow patterns on steeper slopes
-
6. **Extent of wind scoured, blowouts and/or depositional areas:** Small scoured sites may be observed
-
7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement is little to none based on topography and water flow patterns
-
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and litter is at 55% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 4 or greater.
-
9. **Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness):** Use Soil Series description for depth and color of A-horizon
-
10. **Effect on plant community composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Infiltration is moderate.
-
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 or soil surface crusting should be present.
-
12. **Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to) with dominants and sub-dominants and "others" on separate lines:**
Dominant:
Sub-dominant:

Other:
Additional: Mid stature Cool Season Grasses > Mid Stature Warm Season
Grasses > Shrubs = Forbs = Short Grasses/Grasslikes

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Very Low

14. Average percent litter cover (%) and depth (inches): Average litter cover is 20-30% with depths of 0.25 to 0.5 inches

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 1400 lbs/ac

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 indicator, we are describing what is NOT expected in the reference state for the ecological site: Blue grama, Big sagebrush, Fringed sagewort, Prickly Pear, and Species found on Noxious Weed List

17. Perennial plant reproductive capability: All species are capable of reproducing

Reference Sheet Approval

Approval
E. Bainter

Date
3/5/2008

United States Department of Agriculture Natural Resources Conservation Service Ecological Site Description

Section I: Ecological Site Characteristics

Ecological Site Identification and Concept

Site name: Loamy (Ly) 15-17" Northern Plains Precipitation Zone

Site type: Rangeland

Site ID: R056BY222WY

Major land resource area (MLRA): 056B-Northern Rolling High Plains, Southern Part

[Precipitation Zones for Rangeland Ecological Site Descriptions](#)



Physiographic Features

This site occurs on land nearly level up to 50% slopes.

Landform: (1) Hill
(2) Alluvial fan
(3) Stream terrace

	<u>Minimum</u>	<u>Maximum</u>
<i>Elevation (feet):</i>	3400	4600
<i>Slope (percent):</i>	0	50
<i>Flooding</i>		
<i>Frequency:</i>	None	None
<i>Ponding</i>		
<i>Depth (inches):</i>	0	0
<i>Frequency:</i>	None	None
<i>Runoff class:</i>	Low	Medium
<i>Aspect:</i>	No Influence on this site	

Climatic Features

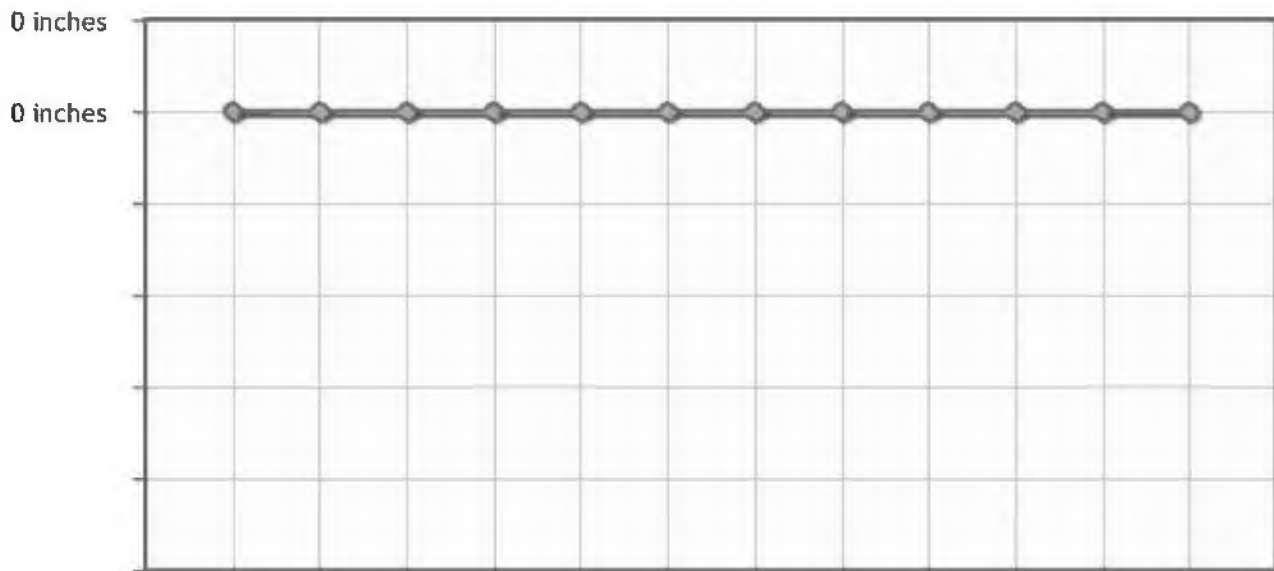
Annual precipitation ranges from 15-17 inches per year. Wide fluctuations may occur in yearly precipitation and result in more drought years than those with more than normal

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. Wind speed averages about 8 mph, ranging from 10 mph during the spring to 7 mph during late summer. 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 1 and continues to about July 1. Native warm-season plants begin growth about May 15 and continue to about August 15. Green up of cool season plants may occur in September and October of most years. The following information is from the "Echeta 2 NW" climate station: Frost-free period (32 F): 70-142 days; (5 yrs. out of 10, these days will occur between June 7 – September 16) Freeze-free period (28 F): 106-154 days; (5 yrs. out of 10, these days will occur between May 14 – September 23) Mean annual precipitation: 15.82 inches Mean annual air temperature: 45.2 F (30.0 F Avg. Min. - 60.4 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: "Recluse 14 NNW".

	<u>Averaged</u>
<i>Frost-free period (days):</i>	106
<i>Freeze-free period (days):</i>	130
<i>Mean annual precipitation (inches):</i>	17.00

Monthly Precipitation (Inches):

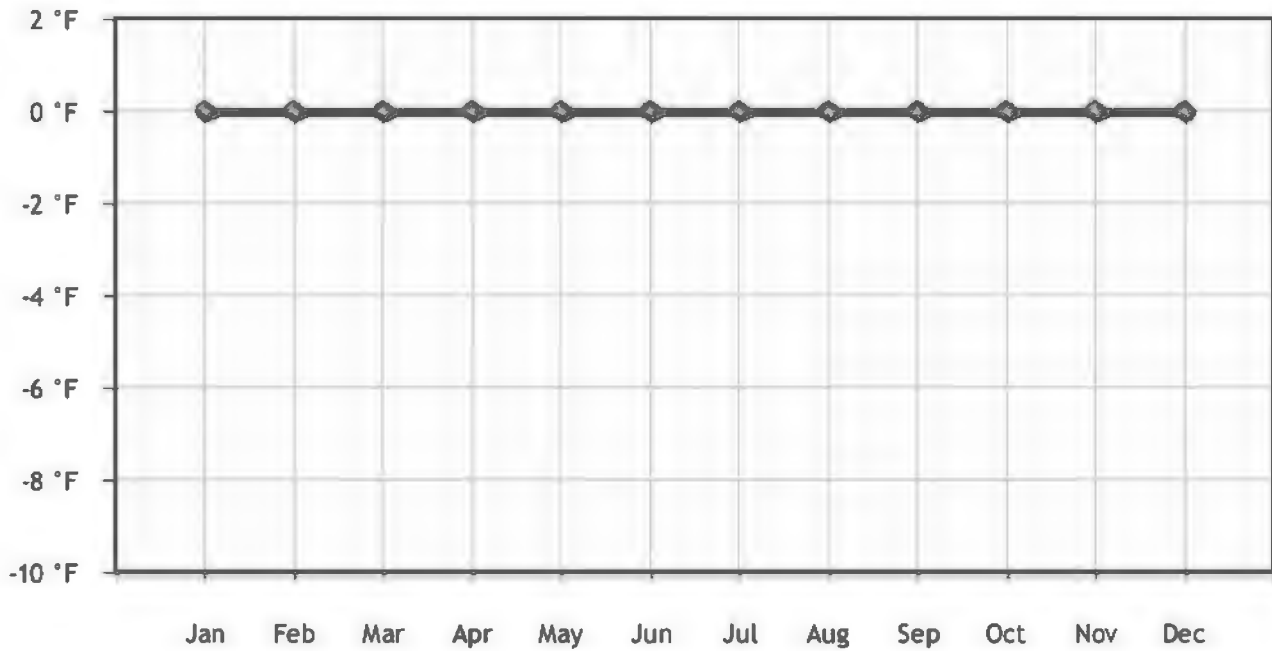
	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Low</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Monthly Temperature (°F):

	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<i>High</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Low</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Influencing Water Features

Stream type: None

Representative Soil Features

The soils of this site are deep to moderately deep (greater than 20" to bedrock), well-drained & moderately permeable. Layers of the soil most influential to the plant community vary from 3 to 6 inches thick. These layers consist of the A horizon with very fine sandy loam, loam, or silt loam texture and may also include the upper few inches of the B horizon with sandy clay loam, silty clay loam or clay loam texture.

Major Soil Series correlated to this site include: Deekay, Oldwolf, Iwait, Jaywest, Spotted horse, Ucross and Ziggy.

Other Soil Series correlated to this site in MLRA 58B include: Cedarbutte, Cedak dry, Soda wells, Emigrant, Rocky point, Jonpol, Brislawn, Rocky butte, Muleherder, Nuncho, Platmack, Recluse, Oshoto and Kline draw

Surface texture: (1) Loam
(2) Sandy loam
(3) Very fine sandy loam

Subsurface texture group: Loamy

	<u>Minimum</u>	<u>Maximum</u>
<i>Surface fragments <=3" (% cover):</i>	0	0
<i>Surface fragments >3" (% cover):</i>	0	10
<i>Subsurface fragments <=3" (% volume):</i>	0	20
<i>Subsurface fragments >3" (% volume):</i>	0	10

Drainage class: Moderately well drained to well drained

Permeability class: Moderately slow to moderate

	<u>Minimum</u>	<u>Maximum</u>
<i>Depth (inches):</i>	20	60
<i>Available water capacity (inches):</i>	2.10	5.50
<i>Electrical conductivity (mmhos/cm):</i>	0	4
<i>Sodium adsorption ratio:</i>	0	5
<i>Calcium carbonate equivalent (percent):</i>	0	10
<i>Soil reaction (1:1 water):</i>	7.8	8.4

Plant Communities

Ecological Dynamics of the Site

As this site deteriorates because of a combination of frequent and severe grazing, species such as blue grama and big sagebrush will increase. Grasses such as green needlegrass, needleandthread, big bluestem, little bluestem and western wheatgrass will decrease in frequency and production.

Big sagebrush may become dominant on some areas with an absence of fire. Wildfires are actively controlled in recent times so chemical control using herbicides has replaced the historic role of fire on this site. Recently, prescribed burning has regained some popularity.

Due to the amount and pattern of the precipitation, the big sagebrush component typically is not resilient once it has been removed if a healthy and vigorous stand of grass exists and is maintained. The exception to this is where the herbaceous component is severely degraded at the time of treatment, growing conditions are unfavorable after treatment, and/or recovery periods are inadequate.

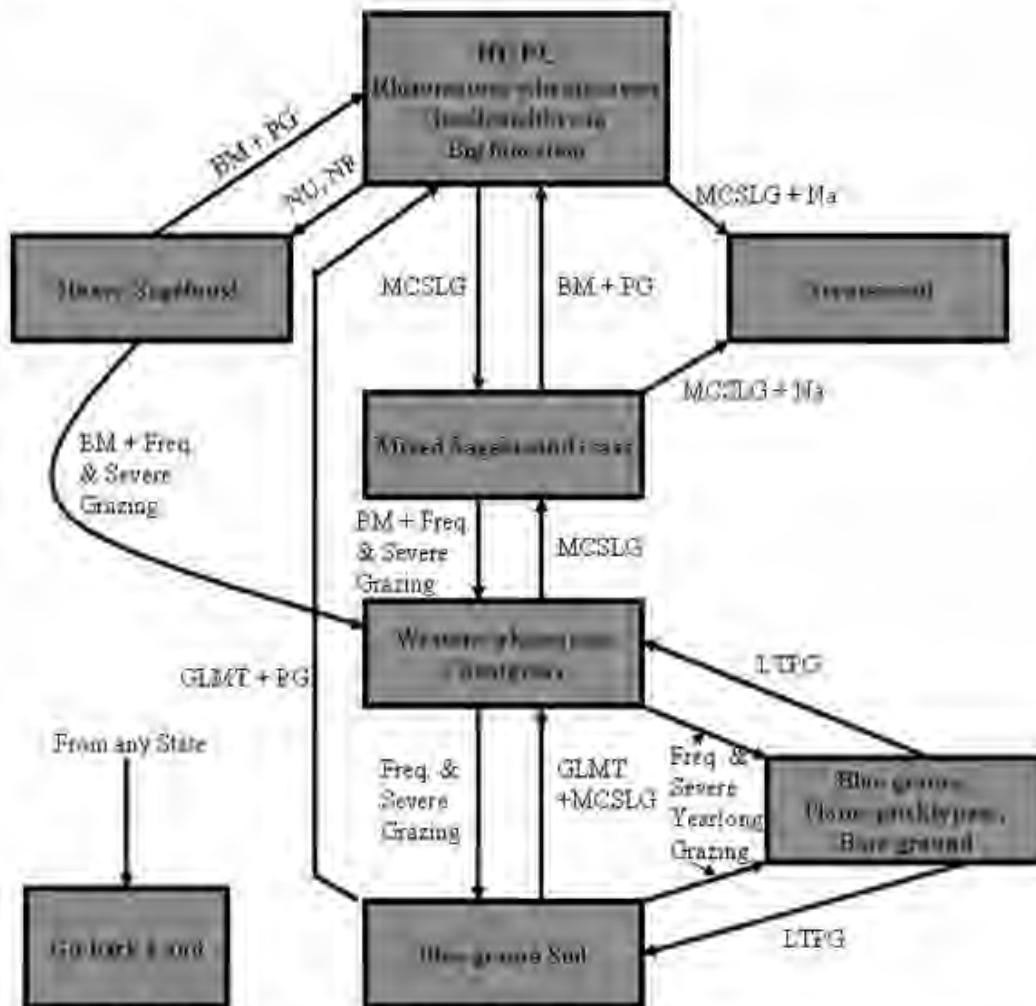
The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical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

Site Type: Rangeland
MLRA: 35B - Northern Rolling High Plains

Loamy 15-17" P.Z.
R058BY222WY



BM - Brush Management (fire, chemical, mechanical)
 Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool season Mid-grasses during the Growing Season
 GLMT - Grazing Land Mechanical Treatment
 LTPG - Long-term Prescribed Grazing
 MCSLG - Moderate, Continuous Season-long Grazing
 NU, NF - No Use and No Fire
 PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)
 VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)
 Na - found adjacent to a saline site

Technical Guide
Section III

4

USDA-NRCS
Rev. 03-08-01

Rhizomatous Wheatgrasses/ Needleandthread/Big Bluestem Plant Community

This plant community is the interpretive plant community for this site and is considered to be the Historic Climax Plant Community (HCPC). This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning.

and sometimes on areas receiving occasional short periods of rest. The potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% woody plants. A mix of warm and cool season mid-grasses dominates the state.

The major grasses include western wheatgrass, needleandthread, big bluestem, little bluestem, and green needlegrass. Other grasses occurring on the state include threadleaf sedge, Sandberg's bluegrass, bluebunch wheatgrass, blue grama, and sideoats grama. A variety of forbs and half-shrubs also occur, as shown in the preceding table. Big sagebrush is a conspicuous element of this state, occurs in a mosaic pattern, and makes up 5 to 10% of the annual production. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 1,900 lbs./acre, but it can range from about 1500 lbs./acre in unfavorable years to about 2300 lbs./acre in above average years.

This plant community is extremely stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity).

Transitions or pathways leading to other plant communities are as follows:

- No use and no fire for 20 years or more will convert this plant community to the Heavy Sagebrush Plant Community.
- Moderate, continuous season-long grazing will convert the plant community to the Mixed Sagebrush/Grass Plant Community.
- Moderate continuous season-long grazing, where greasewood occurs adjacent to the state, will convert the plant community to the Greasewood Plant Community.
- When cropped annually and then abandoned without reseeding, the state is converted to the Go-back Land Plant Community.

Rhizomatous Wheatgrasses/ Needleandthread/Big Bluestem Plant Community Plant Species Composition

Grass/Grasslike				<u>Annual Production</u> (pounds per acre)		
<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
1		streambank wheatgrass, thickspike wheatgrass	ELLAL	<i><u>Elymus lanceolatus ssp. lanceolatus</u></i>	375	575
		western wheatgrass	PASM	<i><u>Pascopyrum smithii</u></i>	375	575
2		green needlegrass	NAVI4	<i><u>Nassella viridula</u></i>	225	345

3	needle and thread, needleandthread	HECO26	<u>Hesperostipa comata</u>	300	460
4	big bluestem	ANGE	<u>Andropogon gerardii</u>	150	230
5	Cusick's bluegrass, Cusick bluegrass	POCU3	<u>Poa cusickii</u>	150	230
6	blue grama	BOGR2	<u>Bouteloua gracilis</u>	150	230
7	Indian ricegrass	ACHY	<u>Achnatherum hymenoides</u>	75	115
	sideoats grama	BOCU	<u>Bouteloua curtipendula</u>	75	115
	hairy grama	BOHI2	<u>Bouteloua hirsuta</u>	75	115
	needleleaf sedge	CADU6	<u>Carex duriuscula</u>	75	115
	threadleaf sedge	CAFI	<u>Carex filifolia</u>	75	115
	plains reedgrass	CAMO	<u>Calamagrostis montanensis</u>	75	115
	prairie Junegrass	KOMA	<u>Koeleria macrantha</u>	75	115
	Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	POSE	<u>Poa secunda</u>	75	115
	bluebunch wheatgrass	PSSP6	<u>Pseudoroegneria spicata</u>	75	115
	little bluestem	SCSC	<u>Schizachyrium scoparium</u>	75	115

Forb				<u>Annual Production (pounds per acre)</u>	
<u>Group Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
8	yarrow	ACHIL	<u>Achillea</u>	225	345
	textile onion	ALTE	<u>Allium textile</u>	75	115
	rosy pussytoes, rose pussytoes	ANRO2	<u>Antennaria rosea</u>	75	115
	aster	ASTER	<u>Aster</u>	75	115
	milkvetch	ASTRA	<u>Astragalus</u>	75	115
	tapertip hawksbeard	CRAC2	<u>Crepis acuminata</u>	75	115
	white prairie clover	DACA7	<u>Dalea candida</u>	75	115
	violet prairie clover, purple prairie clover	DAPU5	<u>Dalea purpurea</u>	75	115
	sulphur-flower buckwheat	ERUM	<u>Eriogonum umbellatum</u>	75	115
	scarlet beeblossom, scarlet gaura	GACO5	<u>Gaura coccinea</u>	75	115

stemless mock goldenweed	HAAC	<i>Haplopappus acutis(ten)</i>	75	115
desertparsley, biscuitroot	LOMAT	<i>Lomatium</i>	75	115
bluebells	MERTE	<i>Mertensia</i>	75	115
large Indian breadroot, breadroot scurpee	PEES	<i>Pediemelum esculentum</i>	75	115
upright prairie coneflower, prairie coneflower	RACOS	<i>Ratibida columnifera</i>	75	115
American vetch	VIAM	<i>Vicia americana</i>	75	115

Shrub/Vine				Annual Production (pounds per acre)	
Group	Common name	Symbol	Scientific name	Low	High
9	big sagebrush	ARTR2	<i>Artemisia tridentata</i>	150	230
10	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	75	115

Plant Growth Curve

Growth curve number: WY1501

Growth curve name: 15-17NP Upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	25	40	10	5	5	5	0	0



Mixed Sagebrush/Grass Plant Community

Historically, this plant community evolved under grazing by bison and a low fire frequency. Currently, it is found under moderate, season-long grazing by livestock in the absence of fire or brush management. Big sagebrush is a significant component of this plant community. A mix of warm and cool-season grasses make up the majority of the understory with the balance made up of annual cool-season grasses, and miscellaneous forbs.

Dominant grasses include needleandthread, western wheatgrass, little bluestem and green needlegrass. Grasses of secondary importance include blue grama, prairie junegrass, and Sandberg bluegrass. Forbs commonly found in this plant community include plains wallflower, hairy goldaster, slimflower scurfpea, and scarlet globemallow. Sagebrush canopy ranges from 20% to 30%. Fringed sagewort is commonly found. Plains pricklypear can also occur.

When compared to the Historic Climax Plant Community, sagebrush and blue grama have increased. Production of cool-season grasses, particularly green needlegrass, has been reduced. The cool-season mid-grasses are protected by the sagebrush canopy, but this protection makes them unavailable for grazing. Cheatgrass (downy brome) has invaded the state. The overstory of sagebrush and understory of grass and forbs provide a diverse plant community that will support domestic livestock and wildlife such as mule deer and antelope.

The total annual production (air-dry weight) of this state is about 1400 pounds per acre, but it can range from about 1000 lbs./acre in unfavorable years to about 1800 lbs./acre in above average years.

This plant community is resistant to change. A significant reduction of big sagebrush can only be accomplished through fire or brush management. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

Transitions or pathways leading to other plant communities are as follows:

- Brush management (chemical, fire, or mechanical), followed by prescribed grazing, will convert this plant community to the Rhizomatous wheatgrasses/ Needleandthread/ Big Bluestem Plant Community. The probability of this occurring is high. When prescribed fire is used, sufficient fine fuels will need to be present. This may require deferment from grazing prior to treatment. Post management is critical to ensure success. This can range from two or more years of rest to partial growing season deferment, depending on the condition of the

understory at the time of treatment and the growing conditions following treatment. In the case of an intense wildfire that occurs when desirable plants are not completely dormant, the length of time required to reach the Rhizomatous wheatgrasses, Needleandthread, Blue grama Plant Community may be increased.

- Brush management, followed by frequent and severe grazing, will convert the plant community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high. If bare areas exist after treatment, along with no recovery periods from grazing, cheatgrass will invade and plants not as resistant to grazing as western wheatgrass will be reduced.
- Moderate continuous season-long grazing, where greasewood occurs adjacent to the state, will convert the plant community to the Greasewood Plant Community.

Plant Growth Curve

Growth curve number: WY1501
 Growth curve name: 15-17NP Upland sites
 Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	25	40	10	5	5	5	0	0



Heavy Sagebrush Plant Community

This plant community is the result of long-term protection from grazing and fire. Big sagebrush eventually dominates this plant community with canopy cover often exceeding 60%. At first, excessive litter builds up shading out some of the grasses and forbs. Other plants become decadent with low vigor. Bunch grasses often develop dead centers. Eventually, the interspaces between plants increase in size leaving more soil surface exposed. Organic matter oxidizes in the air rather than being incorporated into the soil.

The dominant plants tend to be somewhat similar to those found in the Historic Climax Plant Community. Weedy species, cool-season grasses, and sedges have increased. Blue grama has decreased. Rodent activity has resulted in an increase in soil disturbance. Cactus and sageworts often increase. Noxious weeds such as Dalmatian toadflax, leafy spurge, or Canada thistle may invade the state if a seed source is present. Plant diversity is moderate to high.

The total annual production (air-dry weight) of this state is about 1200 pounds per acre, but it can range from about 900 lbs./acre in unfavorable years to about 1,500 lbs./acre in above average years.

This plant community is not resistant to change and is more vulnerable to severe disturbance than the HCPC. The introduction of grazing or fire quickly changes the plant community.

Soil erosion is accelerated because of increased bare ground. Water flow patterns and pedestaling are obvious. Infiltration is reduced and runoff is increased.

Transitions or pathways leading to other plant communities are as follows:

- Brush management, followed by prescribed grazing, will return this plant community to at or near the Rhizomatous Wheatgrasses/ Needleandthread/ Big Bluestem Plant Community.
- Brush management, followed by frequent and severe grazing, will convert the plant community to the Western Wheatgrass/Cheatgrass Plant Community. The probability of this occurring is high because of the amount of bare ground exposed to cheatgrass invasion.

Plant Growth Curve

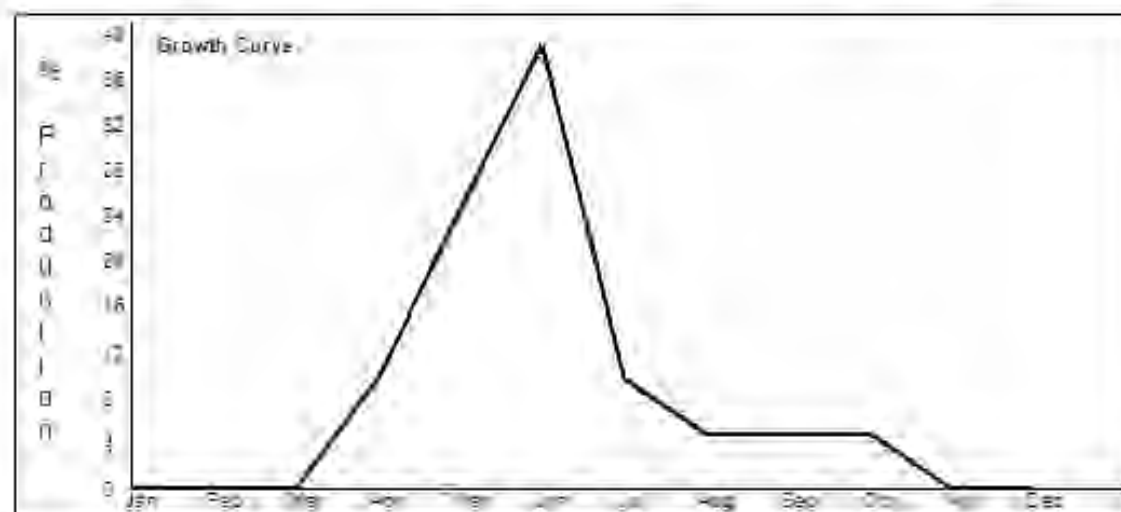
Growth curve number: WY1501

Growth curve name: 15-17NP Upland sites

Growth curve description:

Percent Production by Month

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 0 0 0 10 25 40 10 5 5 5 0 0

***Western Wheatgrass/Cheatgrass Plant Community***

This plant community is created when the Mixed Sagebrush/Grass Plant Community or the Heavy Sagebrush Plant Community is subjected to fire or brush management not followed by prescribed grazing. Rhizomatous wheatgrasses and annuals will dominate the state.

Compared to the HCPC, cheatgrass has increased with western wheatgrass and thickspike wheatgrass maintaining at a similar or slightly higher level. Virtually all other cool-season mid-grasses are severely decreased. Blue grama is the same or slightly less than found in the HCPC. Plant diversity is low.

The total annual production (air-dry weight) of this state is about 900 pounds per acre, but it can range from about 750 lbs./acre in unfavorable years to about 1250 lbs./acre in above average years.

This plant community is relatively stable with the rhizomatous wheatgrasses being somewhat resistant to overgrazing and the cheatgrass effectively competing against the establishment of perennial cool-season grasses.

An increase in bare ground reduces water infiltration and increases soil erosion. The watershed is usually functioning. The biotic integrity is reduced by the lack of diversity in the plant community.

Transitions or pathways leading to other plant communities are as follows:

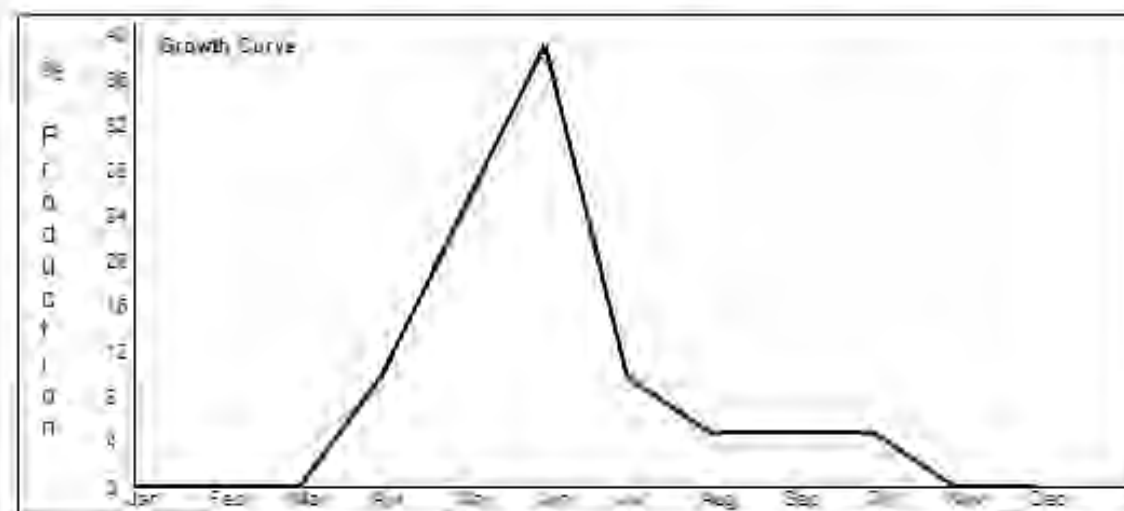
- Moderate continuous season-long grazing will eventually return this plant community to the Mixed Sagebrush/Grass Plant Community.
- Frequent and severe grazing will convert this plant community to Blue Grama Sod Plant Community.
- Frequent and severe yearlong grazing will convert this plant community to Blue grama, Plains Pricklypear/ Bare Ground Plant Community.
- Long-term, prescribed grazing will eventually return this plant community to at or near the Rhizomatous Wheatgrasses/ Needleandthread/ Big Bluestem Plant Community.

Plant Growth Curve

Growth curve number: WY1501
 Growth curve name: 15-17NP Upland sites
 Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	25	40	10	5	5	5	0	0



Blue Grama Sod Plant Community

This plant community is the result of frequent and severe grazing during the growing season of the cool-season mid-grasses. A dense sod of blue grama dominates it. Pricklypear cactus

can become dense enough so that livestock cannot graze forage growing within the cactus clumps.

When compared to the Historic Climax Plant Community, blue grama and threadleaf sedge have increased. All cool-season mid-grasses and forbs have been greatly reduced. Plant diversity is extremely low.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 450 lbs./acre in unfavorable years to about 1100 lbs./acre in above average years.

This sod bound plant community is very resistant to water infiltration. While this sod protects the state itself, off-site areas are affected by excessive runoff that can cause gully erosion. This sod is very resistant to change and may require a grazing land mechanical treatment, such as chiseling, to return the cool-season grass component.

Transitions or pathways leading to other plant communities are as follows:

- Grazing land mechanical treatment (chiseling, etc.) and pricklypear cactus control (if needed), followed by prescribed grazing, will return this plant community to near Historic Climax Plant Community condition.
- Grazing land mechanical treatment, followed by moderate continuous season-long grazing, will convert this plant community to the Western Wheatgrass/Cheatgrass Plant Community.
- Frequent and severe yearlong grazing will eventually convert this state to the Blue Grama/ Plains Pricklypear/ Bare Ground Plant Community.

Plant Growth Curve

Growth curve number: WY1501

Growth curve name: 15-17NP Upland sites

Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	25	40	10	5	5	5	0	0



Greasewood Plant Community

This plant community can occur where states are subjected to continuous season-long grazing at moderate stocking rates and where greasewood occurs adjacent to the state. It is dominated by an overstory of greasewood and possibly big sagebrush. Rhizomatous wheatgrasses, cheatgrass, and inland saltgrass make up the understory. Salts in the surface will increase due to the shedding of the salt-filled leaves of the greasewood. Plant diversity is high.

The total annual production (air-dry weight) of this state is about 950 pounds per acre, but it can range from about 700 lbs./acre in unfavorable years to about 1200 lbs./acre in above average years.

This plant community is resistant to change. A significant reduction of greasewood can only be accomplished through repeated brush control treatments. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

The state is protected from erosion as long as ground cover is maintained. The biotic integrity of this state is somewhat intact because of the woody overstory and perennial grass understory. The watershed is functioning as long as a grass cover is maintained.

- Recovery to near Historic Climax Plant Community condition is difficult due to the resistance of greasewood to herbicides and accumulated effects of salts on the soil

Plant Growth Curve

Growth curve number: WY1501

Growth curve 15-17NP Upland sites

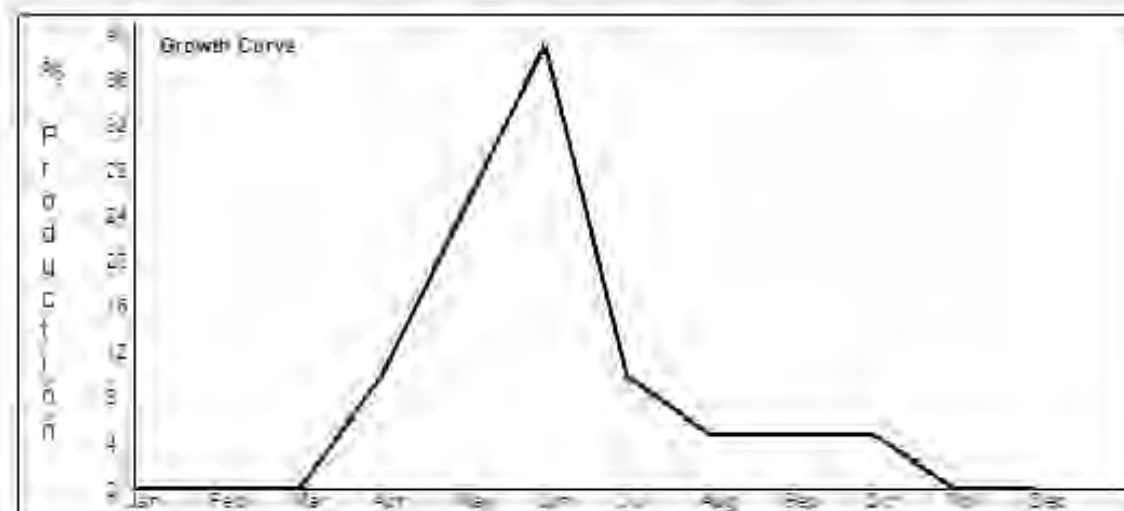
name:

Growth curve

description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	25	40	10	5	5	5	0	0



Blue Grama/ Plains Pricklypear/ Bare Ground Plant Community

This plant community is the result of frequent and severe yearlong grazing over the long-term. Perennial plants are decreased. Cheatgrass, annual weeds, and bare ground have increased. Plains pricklypear may have increased, rendering much of the forage unusable by livestock.

This plant community is highly variable depending on the severity, frequency, and duration of the grazing and also the condition of the plant community when this level of grazing began. Virtually all plants not resistant to overgrazing may have been eliminated. Dominant plants may include blue grama, threeawns, annuals, and rhizomatous wheatgrasses to a lesser degree. Perennial plant diversity is low.

The total annual production (air-dry weight) of this state is about 600 pounds per acre, but it can range from about 400 lbs./acre in unfavorable years to about 800lbs./acre in above average years.

This state is unhealthy and subject to increased erosion. Runoff is high on these states due

to the sod nature of blue grama and bare ground.

Transitions or pathways leading to other plant communities are as follows:

- Long-term prescribed grazing will convert this plant community initially to the Blue Grama Sod Plant Community, when the state is dominated by blue grama sod at the time of treatment.
- Long-term prescribed grazing will convert this plant community to the Western Wheatgrass /Cheatgrass Plant Community, when the state has large amounts of cheatgrass, annual weeds, and bare ground at the time of treatment. Control of plains pricklypear cactus may be necessary.

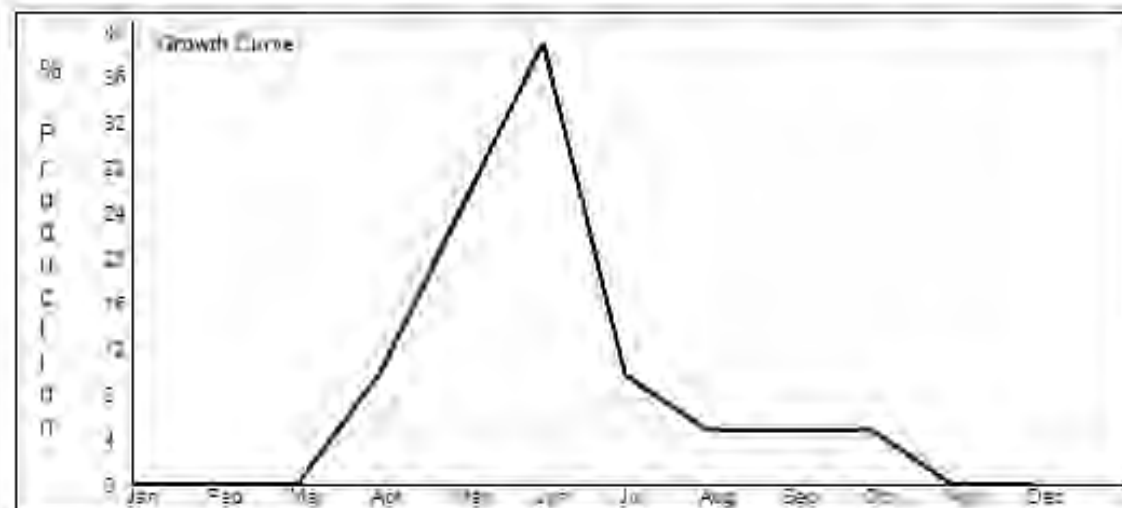
Reseeding areas with native plant species and proper grazing management may be necessary to accelerate recovery where few desirable plants remain.

Plant Growth Curve

Growth curve number: WY1501
Growth curve name: 15-17NP Upland sites
Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	25	40	10	5	5	5	0	0



Go-back Land Plant Community

This plant community occurs on land that has been cropped annually in the past and then

abandoned without reseeding. Natural succession has resulted in a plant community dominated by varying combinations of threeawns, cheatgrass, blue grama, Sandberg bluegrass, and some rhizomatous wheatgrasses. Forage production is low since grasses such as threeawns and cheatgrass are not used efficiently by livestock.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 600 lbs./acre in unfavorable years to about 1200 lbs./acre in above average years.

The potential for accelerated erosion can be highly variable depending on amount of bare ground present. Biological diversity is low.

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing may be used to increase desirable native cool-season grass production. It is usually difficult to return to near Historic Climax Plant Community condition in a timely manner because of past soil loss.
- Grazing land mechanical treatment (i.e., chiseling) may improve forage production where significant rhizomatous wheatgrass is present to respond.

Where there is a lack of perennial grasses, reseeding to tame or native species may be necessary to return these lands to production in the form of pastureland. These pastures are normally seeded to crested wheatgrass, pubescent wheatgrass, or Russian wildrye. They require considerable investment to establish and have a variable life expectancy. They do produce up to 50% more than native range, but their value as forage is somewhat limited due to the single species usually seeded. In some cases, the single species or certain groups of species (e.g., wheatgrasses) may be more vulnerable to infestation by associated insects and/or diseases (e.g., black grass bugs).

Plant Growth Curve

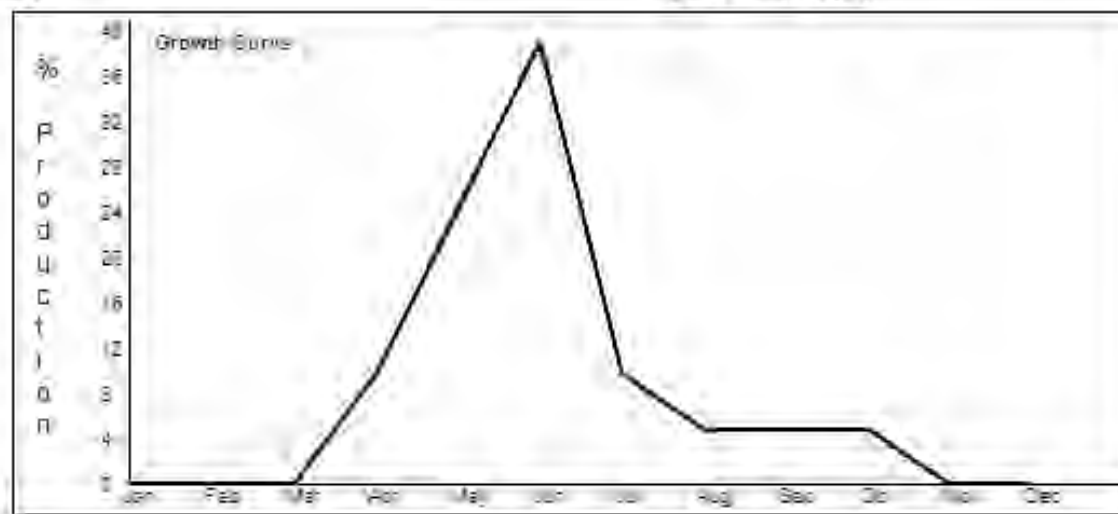
Growth curve number: WY1501

Growth curve name: 15-17NP Upland sites

Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	25	40	10	5	5	5	0	0



Section II: Ecological Site Interpretations

Animal Community

Animal Community – Wildlife Interpretations

Rhizomatous Wheatgrasses/ Needleandthread/Big Bluestem Plant Community (HCPC): 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. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include Western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Mixed Sagebrush/Grass Plant Community: The combination of an overstory of sagebrush and an understory of grasses and forbs provide a very diverse plant community for wildlife. The crowns of sagebrush tend to break up hard crusted snow on winter ranges, so mule deer and antelope may use this state for foraging and cover year-round, as would cottontail and jack rabbits. It provides important winter, nesting, brood-rearing, and foraging habitat for sage grouse. Brewer's sparrows' nest in big sagebrush plants, and hosts of other nesting birds utilize stands in the 20-30% cover range.

Heavy Sagebrush Plant Community: This plant community can provide important winter foraging for elk, mule deer and antelope, as sagebrush can approach 15% protein and 40-60% digestibility during that time. This community provides excellent escape and thermal cover for large ungulates, as well as nesting and brood rearing habitat for sage grouse.

Western Wheatgrass/Cheatgrass Plant Community: This plant community may be useful for the same large grazers that would use the Historic Climax Plant Community. However, the plant community composition is less diverse, and thus, less apt to meet the seasonal needs of these animals. It may provide some foraging opportunities for sage grouse when it occurs proximal to woody cover. Good grasshopper habitat equals good foraging for birds.

Blue Grama Sod and Go-back Land Plant Communities: These communities provide limited foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover and if the Historic Climax Plant Community or the Western Wheatgrass/Cheatgrass Plant Community is limiting. Generally, these are not target plant communities for wildlife habitat management.

Greasewood Plant Community: This plant community exhibits a low level of plant species diversity due to the accumulation of salts in the soil. It may provide some thermal and escape cover for deer and antelope if no other woody community is nearby, but in most cases it is not a desirable plant community to select as a wildlife habitat management objective.

Blue Grama, Plains Pricklypear/Bare Ground Plant Community: Benefits to other wildlife are largely due to the subterranean structure created by the prairie dogs, not the sparse vegetation found on this plant community.

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)

Rhizomatous WG/ Needleandthread/ Big Bluestem 1500-2300 .5

Heavy Sagebrush 900-1500 .35

Blue Grama Sod 450-1100 .25

Mixed Sagebrush/Grass 1000-1800 .4

Western Wheatgrass/Cheatgrass 750-1250 .3

Blue grama/Plains Pricklypear/ Bare ground 400-800 .1

Greasewood 700-1200 .25

Go-back Land 600-1200 .25

* - 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.

Plant Preference by Animal Kind

Animal kind: ALL antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>E</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
leadplant	<u><i>Amorpha canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
big bluestem	<u><i>Andropogon gerardii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sand bluestem	<u><i>Andropogon hallii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u><i>Artemisia cana ssp. cana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
milkvetch	<u><i>Astragalus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
fourwing saltbush Gardner's	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

saltbush	<u><i>Atriplex gardneri</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
sideoats grama	<u><i>Bouteloua curtipendula</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
blue grama	<u><i>Bouteloua gracilis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
hairy grama	<u><i>Bouteloua hirsuta</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
bluejoint, bluejoint reedgrass	<u><i>Calamagrostis canadensis</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
needleleaf sedge	<u><i>Carex duriuscula</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
threadleaf sedge	<u><i>Carex filifolia</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
inland sedge	<u><i>Carex interior</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
sun sedge	<u><i>Carex inops ssp. heliophila</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
spike sedge	<u><i>Carex nardina</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
garden yellowrocket	<u><i>Campe stricta(syn)</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
northern reedgrass	<u><i>Calamagrostis stricta ssp. inexpansa</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
water hemlock	<u><i>Cicuta</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
		Entire												
poison hemlock	<u><i>Conium maculatum</i></u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
		Entire												
tapertip hawksbeard	<u><i>Crepis acuminata</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
white prairie clover	<u><i>Dalea candida</i></u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												

violet prairie clover, purple prairie clover	<u>Dalea purpurea</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u>Elatine californica</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u>Gaura coccinea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia lanata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u><i>Mertensia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
plains muhly, stoneyhills muhly	<u><i>Muhlenbergia cuspidata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
green needlegrass	<u><i>Nassella viridula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u><i>Pascopyrum smithii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot scurfpea	<u><i>Pediomelum esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u><i>Pinus ponderosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u><i>Poa canbyi(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u><i>Poa cusickii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u><i>Populus deltoides ssp. monilifera</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u><i>Poa secunda</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u><i>Poa secunda ssp. juncifolia(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
bluebunch wheatgrass	<u><i>Pseudoroegneria spicata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's alkaligrass	<u><i>Puccinellia nuttalliana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
bur oak	<u><i>Quercus macrocarpa</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
upright prairie coneflower, prairie		Entire												

coneflower	<u>Ratibida columnifera</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
skunkbush sumac	<u>Rhus trilobata</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Rosa woodsii var. woodsii</u>	Entire												
Woods' rose	<u>woodsii</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
willow	<u>Salix</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Sarcobatus vermiculatus</u>	Entire												
greasewood	<u>Schizachyrium scoparium</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
little bluestem	<u>scoparium</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
blue-eyed grass	<u>Sisyrinchium</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
alkali sacaton	<u>Sporobolus airoides</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
sand dropseed	<u>Sporobolus cryptandrus</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
alkali cordgrass	<u>Spartina gracilis</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
prairie cordgrass	<u>Spartina pectinata</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
Pursh seepweed	<u>Suaeda calceoliformis</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Symphoricarpos occidentalis</u>	Entire												
western snowberry	<u>occidentalis</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire												
prairie thermopsis	<u>var. annulocarpa(syn)</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
arrowgrass	<u>Triglochin</u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
		Entire												
narrowleaf cattail	<u>Typha angustifolia</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
broadleaf cattail	<u>Typha latifolia</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
American vetch	<u>Vicia americana</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
soapweed yucca, small soapweed	<u>Yucca glauca</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: ALL cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	F	M	A	M	J	J	A	S	O	N	D
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

textile onion	<u>Allium textile</u>	Entire plant	D D D D D D D D D D D D D
leadplant	<u>Amorpha canescens</u>	Entire plant	P P P P P P P P P P P P P
big bluestem	<u>Andropogon gerardii</u>	Entire plant	P P P P P P P P P P P P P
sand bluestem	<u>Andropogon hallii</u>	Entire plant	P P P P P P P P P P P P P
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U U U U U U U U U U U U U
silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	D D D D D D D D D D D D D
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U U U U U U U U U U U U U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U U U U U U U U U U U U U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U U U U U U U U U U U U U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U U U U U U U U U U U U U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	U U U U U U U U U U U U U
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T T T T T T T T T T T T T
milkvetch	<u>Astragalus</u>	Entire plant	D D D D D D D D D D D D D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P P P P P P P P P P P P P
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P P P P P P P P P P P P P
sideoats grama	<u>Bouteloua curtipendula</u>	Entire plant	P P P P P P P P P P P P P
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D D D D D D D D D D D D D
hairy grama	<u>Bouteloua hirsuta</u>	Entire plant	D D D D D D D D D D D D D
buffalograss	<u>Buchloe dactyloides(syn)</u>	Entire plant	D D D D D D D D D D D D D
bluejoint, bluejoint reedgrass	<u>Calamagrostis canadensis</u>	Entire plant	P P P P P P P P P P P P P
needleleaf sedge	<u>Carex duriuscula</u>	Entire plant	U U U U U U U U U U U U U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D D D D D D D D D D D D D

inland sedge	<u>Carex interior</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sun sedge	<u>Carex inops ssp. heliophila</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
garden yellowrocket	<u>Campe stricta(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
northern reedgrass	<u>Calamagrostis stricta ssp. inexpansa</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
yellow rabbitbrush, green														
rabbitbrush, low														
rabbitbrush, Douglas														
rabbitbrush	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
white prairie clover	<u>Dalea candida</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple														
prairie clover	<u>Dalea purpurea</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u>Elatine californica</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush	<u>Elymus elymoides ssp.</u>	Entire												

squirreltail	<u><i>elymoides</i></u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u><i>Gaura coccinea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia lanata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u><i>Mertensia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
plains muhly, stoneyhills muhly	<u><i>Muhlenbergia cuspidata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
mat muhly	<u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

green needlegrass	<u>Nassella viridula</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u>Pinus ponderosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
bur oak	<u>Quercus macrocarpa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: ALL deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
leadplant	<u>Amorpha canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
big bluestem	<u>Andropogon gerardii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sand bluestem	<u>Andropogon hallii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
milkvetch	<u>Astragalus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sideoats grama	<u>Bouteloua curtipendula</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u>Bouteloua hirsuta</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u>Buchloe dactyloides(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u>Calamagrostis canadensis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needleleaf sedge	<u>Carex duriuscula</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u>Carex interior</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
sun sedge	<u>Carex inops ssp. heliophila</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
plains reedgrass	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nardina</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Nebraska sedge	<u>Carex nebrascensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
garden yellowrocket	<u>Campe stricta(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
northern	<u>Calamagrostis stricta</u>	Entire												

reedgrass	<u>ssp. <i>inexpansa</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock tapertip hawksbeard	<u><i>Conium maculatum</i></u> <u><i>Crepis acuminata</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
white prairie clover	<u><i>Dalea candida</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple prairie clover	<u><i>Dalea purpurea</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass	<u><i>Deschampsia caespitosa</i></u> (syn)	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland saltgrass	<u><i>Distichlis spicata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
California waterwort	<u><i>Elatine californica</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Canada wildrye	<u><i>Elymus canadensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
silverberry	<u><i>Elaeagnus commutata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
squirreltail, bottlebrush squirreltail	<u><i>Elymus elymoides</i></u> ssp. <u><i>elymoides</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus</i></u> ssp. <u><i>lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
scarlet														

beeblossom, scarlet gaura	<u><i>Gaura coccinea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice stemless mock goldenweed	<u><i>Glycyrrhiza lepidota</i></u> <u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie Junegrass	<u><i>Koeleria macrantha</i></u> <u><i>Krascheninnikovia lanata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat		Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u><i>Mertensia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
plains muhly, stoneyhills muhly	<u><i>Muhlenbergia cuspidata</i></u> <u><i>Muhlenbergia richardsonis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
mat muhly		Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
green needlegrass	<u><i>Nassella viridula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u><i>Pascopyrum smithii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot scurfpea	<u><i>Pediomelum esculentum</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u><i>Pinus ponderosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u><i>Poa canbyi(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u><i>Poa cusickii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
bur oak	<u>Quercus macrocarpa</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie thermopsis	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												

arrowgrass	<u>Triglochin</u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: ALL horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
leadplant	<u>Amorpha canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
big bluestem	<u>Andropogon gerardii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand bluestem	<u>Andropogon hallii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
twogrooved milkvetch	<u>Astragalus bisulcatus</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
milkvetch	<u>Astragalus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sideoats grama	<u><i>Bouteloua curtipendula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u><i>Bouteloua hirsuta</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u><i>Calamagrostis canadensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
needleleaf sedge	<u><i>Carex duriuscula</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u><i>Carex filifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u><i>Carex interior</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sun sedge	<u><i>Carex inops ssp. heliophila</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge garden yellowrocket	<u><i>Carex nebrascensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
northern reedgrass	<u><i>Campe stricta(syn) Calamagrostis stricta ssp. inexpansa</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u><i>Conium maculatum</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

tapertip hawksbeard	<u>Crepis acuminata</u>	Entire plant	U U U U U U U U U U U U U
white prairie clover	<u>Dalea candida</u>	Entire plant	P P P P P P P P P P P P P
violet prairie clover, purple prairie clover	<u>Dalea purpurea</u>	Entire plant	P P P P P P P P P P P P P
tufted hairgrass	<u>Deschampsia caespitosa(syn)</u>	Entire plant	P P P P P P P P P P P P P
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U U U U U U U U U U U U U
California waterwort	<u>Elatine californica</u>	Entire plant	P P P P P P P P P P P P P
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P P P P P P P P P P P P P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U U U U U U U U U U U U U
squirreltail, bottlebrush squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	D D D D D D D D D D D D D
streambank wheatgrass, thickspike wheatgrass	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D D D D D D D D D D D D D
slender wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	P P P P P P P P P P P P P
horsetail	<u>Equisetum</u>	Entire plant	U U U U U U U U U U U U U
rubber rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	U U U U U U U U U U U U U
sulphur-flower buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U U U U U U U U U U U U U
scarlet beeblossom, scarlet gaura	<u>Gaura coccinea</u>	Entire plant	U U U U U U U U U U U U U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U U U U U U U U U U U U U
stemless mock goldenweed	<u>Haplopappus acaulis(syn)</u>	Entire plant	U U U U U U U U U U U U U
needle and thread, needleandthread	<u>Hesperostipa comata</u>	Entire plant	P P P P P P P P P P P P P
iris	<u>Iris</u>	Entire plant	U U U U U U U U U U U U U

Baltic rush	<u>Juncus balticus(syn)</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u>Krascheninnikovia lanata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u>Leymus cinereus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U
bluebells	<u>Mertensia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
plains muhly, stoneyhills muhly	<u>Muhlenbergia cuspidata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U
green needlegrass	<u>Nassella viridula</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u>Pinus ponderosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P

bur oak	<u>Quercus macrocarpa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
willow	<u>Salix</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: ALL sheep

		<u>Plant</u>												
<u>Common name</u>	<u>Scientific name</u>	<u>part</u>	J	F	M	A	M	J	J	A	S	O	N	D

yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
leadplant	<u><i>Amorpha canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
big bluestem	<u><i>Andropogon gerardii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand bluestem	<u><i>Andropogon hallii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u><i>Artemisia cana ssp. cana</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
milkvetch	<u><i>Astragalus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sideoats grama	<u><i>Bouteloua curtipendula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u><i>Bouteloua hirsuta</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u><i>Calamagrostis canadensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												

needleleaf sedge	<u>Carex duriuscula</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
threadleaf sedge	<u>Carex filifolia</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
inland sedge	<u>Carex interior</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
sun sedge	<u>Carex inops ssp. heliophila</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
prairie sandreed	<u>Calamovilfa longifolia</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
plains reedgrass	<u>Calamagrostis montanensis</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
spike sedge	<u>Carex nardina</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
Nebraska sedge	<u>Carex nebrascensis</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
garden yellowrocket	<u>Campe stricta(syn)</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
northern reedgrass	<u>Calamagrostis stricta ssp. inexpansa</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
yellow rabbitbrush, green														
rabbitbrush, low														
rabbitbrush, Douglas	<u>Chrysothamnus viscidiflorus</u>	Entire												
rabbitbrush		plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
water hemlock	<u>Cicuta</u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
		Entire												
poison hemlock	<u>Conium maculatum</u>	plant	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u>Crepis acuminata</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
white prairie clover	<u>Dalea candida</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
violet prairie clover, purple	<u>Dalea purpurea</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
prairie clover	<u>Deschampsia caespitosa(syn)</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												
inland saltgrass	<u>Distichlis spicata</u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
		Entire												
California waterwort	<u>Elatine californica</u>	plant	D	D	D	D	D	D	D	D	D	D	D	D
		Entire												
Canada wildrye	<u>Elymus canadensis</u>	plant	P	P	P	P	P	P	P	P	P	P	P	P
		Entire												

silverberry	<u><i>Elaeagnus commutata</i></u>	plant	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u><i>Elymus elymoides ssp. elymoides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u><i>Gaura coccinea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
needle and thread, needleandthread	<u><i>Hesperostipa comata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u><i>Iris</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u><i>Juncus balticus(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u><i>Juniperus scopulorum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u><i>Koeleria macrantha</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u><i>Krascheninnikovia lanata</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u><i>Leymus cinereus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u><i>Lomatium</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u><i>Mertensia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
plains muhly, stoneyhills muhly	<u><i>Muhlenbergia cuspidata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U U U U U U U U U U U U U
green needlegrass	<u>Nassella viridula</u>	Entire plant	P P P P P P P P P P P P P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D D D D D D D D D D D D D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D D D D D D D D D D D D D
ponderosa pine	<u>Pinus ponderosa</u>	Entire plant	U U U U U U U U U U U U U
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P P P P P P P P P P P P P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P P P P P P P P P P P P P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D D D D D D D D D D D D D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D D
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	P P P P P P P P P P P P P
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P P P P P P P P P P P P P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P P P P P P P P P P P P P
bur oak	<u>Quercus macrocarpa</u>	Entire plant	D D D D D D D D D D D D D
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	P P P P P P P P P P P P P
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D D D D D D D D D D D D D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D D D D D D D D D D D D D
willow	<u>Salix</u>	Entire plant	P P P P P P P P P P P P P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D D D D D D D D D D D D D
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P P P P P P P P P P P P P

blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
prairie cordgrass	<u>Spartina pectinata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D

Legend: P=Preferred; D=Desirable; U=Undesirable; N=Not consumed; E=Emergency; T=Toxic; X=Used, but degree of utilization unknown

Hydrology Functions

Water 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 ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses such as bluebunch wheatgrass. 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 variety 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.

Supporting Information

Associated Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Clayey (Cy)	<u>R058BY204WY</u>	
Lowland (LL)	<u>R058BY228WY</u>	
Overflow (Ov)	<u>R058BY230WY</u>	
Sandy (Sy)	<u>R058BY250WY</u>	
Shallow Loamy (SwLy)	<u>R058BY262WY</u>	

Similar Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Loamy (Ly)	<u>R058BY122WY</u>	Loamy 10-14" Northern Plains P.Z. has lower production.

State Correlation

*This site has been correlated with the following states: **WY***

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site include: Glen Mitchell, Range Management Specialist, NRCS; Chuck Ring, 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, and USDA NRCS Soil Surveys from various counties.

Inventory Data References

Data Source Number of Records Sample Period State County
SCS-RANGE-417 1971-1994 WY Campbell & others

Ocular estimates 1990-1999 WY Campbell & others

Original Site Description Approval

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
G. Mitchell	10/31/2002	E. Bainter	3/11/2008

Reference Sheet

Author(s)/participant(s):

Contact for lead author:

Date: 4/1/2005 **MLRA:** 058B **Ecological Site:** Loamy (Ly) 15-17"
 Northern Plains Precipitation Zone R058BY222WY This *must* be verified based on soils
 and climate (see Ecological Site Description). Current plant community cannot be used to
 identify the ecological site.

Composition (indicators 10 and 12) based on: X Annual Production, Foliar
 Cover, Biomass

Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community and natural disturbance regimes within the reference state, when appropriate and (3) cite data. Continue descriptions on separate sheet.

1. Number and extent of rills: Rills should not be present

2. Presence of water flow patterns: Barely observable

3. Number and height of erosional pedestals or terracettes: Essentially non-existent

4. Bare ground from Ecological Site Description or other studies (rock, litter, standing dead, lichen, moss, plant canopy are not bare ground): Bare ground is 15-25% occurring in small areas throughout site

-
- 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:** None
-
- 7. Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.
-
- 8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and litter is at 75% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 5 or greater.
-
- 9. Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness):** Use Soil Series description for depth and color of A-horizon
-
- 10. Effect on plant community composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Moderate.
-
- 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 or soil surface crusting should be present.
-
- 12. Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to) with dominants and sub-dominants and "others" on separate lines:**

Dominant:

Sub-dominant:

Other:

Additional: Mid-stature Bunch grasses > Mid-stature Rhizomatous grasses > Short stature grasses/grasslikes > Forbs = Shrubs

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Very Low

14. Average percent litter cover (%) and depth (inches): Average litter cover is 30-40% with depths of 0.25 to 1.0 inches

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 1900 lbs/ac

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 indicator, we are describing what is NOT expected in the reference state for the ecological site: Blue grama, Threadleaf sedge, Fringed sagewort, Prickly Pear, Broom Snakeweed, and Species found on Noxious Weed List

17. Perennial plant reproductive capability: All species are capable of reproducing

Reference Sheet Approval

Approval

E. Bainter

Date

3/11/2008

**Data Access**

- > Return to Reports Selection Screen

Report Selections

- > General
- > Physiographic Features
- > Climate Features
- > Water Features
- > Soil Features
- > Plant Communities
- > Site Interpretations
- > Supporting Information
- > Rangeland Health Reference Sheet Complete Report
- > HTML Printable Format

United States Department of Agriculture Natural Resources Conservation Service Ecological Site Description

Section I: Ecological Site Characteristics

Ecological Site Identification and Concept

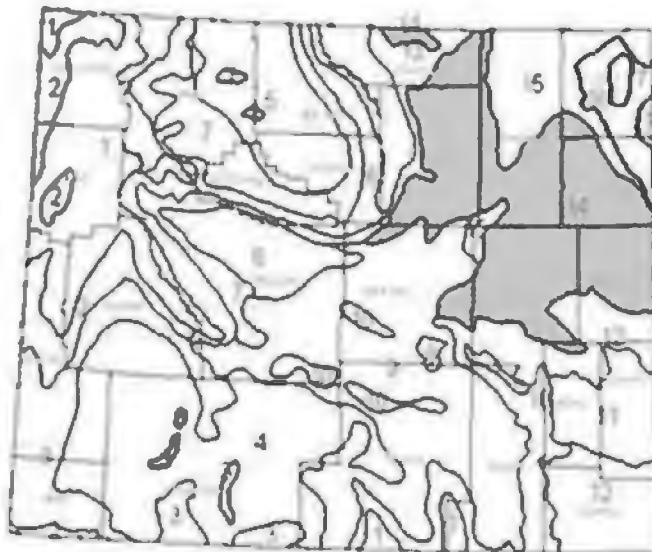
Site name: Sandy (Sy) 10-14" Northern Plains Precipitation Zone

Site type: Rangeland

Site ID: R058BY150WY

Major land resource area (MLRA): 058B-Northern Rolling High Plains, Southern Part

Precipitation Zones for Rangeland Ecological Site Descriptions



Physiographic Features

This site occurs on nearly level to 50% slopes.

Landform: (1) Alluvial fan
(2) Plateau
(3) Ridge

	<u>Minimum</u>	<u>Maximum</u>
<i>Elevation (feet):</i>	3800	5100
<i>Slope (percent):</i>	0	30
<i>Flooding</i>		
<i>Frequency:</i>	None	None
<i>Ponding</i>		
<i>Depth (inches):</i>	0	0
<i>Frequency:</i>	None	Rare
<i>Runoff class:</i>	Negligible	High
<i>Aspect:</i>	No Influence on this site	

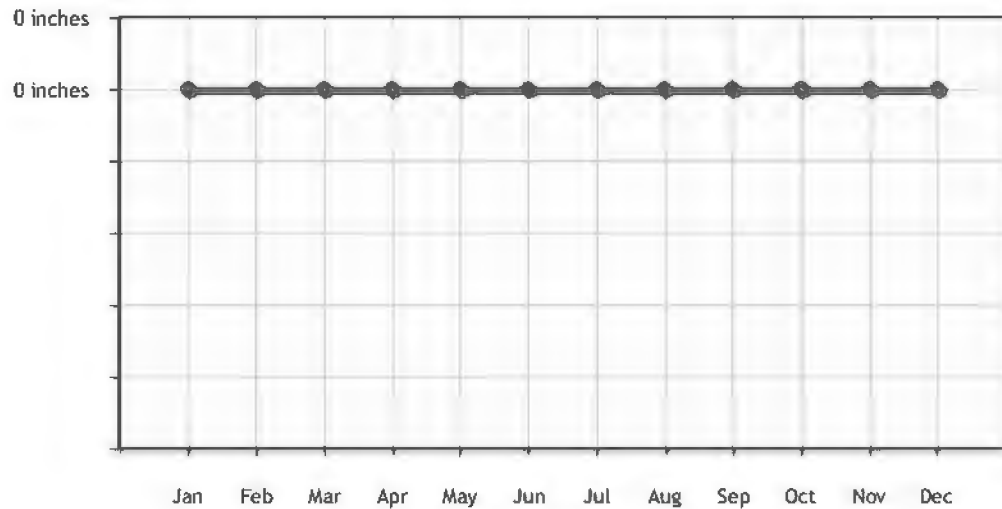
Climatic Features

Annual precipitation ranges from 10-14 inches per year. Wide fluctuations may occur in yearly precipitation and result in more drought years than those with more than normal precipitation. Temperatures show a wide range between summer and winter and between daily maximums and minimums. This is predominantly due to the high elevation and dry air, which permits rapid incoming and outgoing radiation. Cold air outbreaks 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. Wind speed averages about 8 mph, ranging from 10 mph during the spring to 7 mph during late summer. 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 1 and continues to about July 1. Native warm season plants begin growth about May 15 and continue to about August 15. Green up of cool season plants may occur in September and October of most years. The following information is from the "Clearmont 5 SW" climate station: Frost-free period (32 F): 76 - 132 days; (5 yrs. out of 10, these days will occur between May 30 – September 11) Freeze-free period (28 F): 110 - 145 days; (5 yrs. out of 10, these days will occur between May 16 – September 21) Mean annual precipitation: 12.4 inches Mean annual air temperature: 43.2 F (28.4 F Avg. Min. – 57.9 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: "Dull Center".

	<u>Averaged</u>
<i>Frost-free period (days):</i>	104
<i>Freeze-free period (days):</i>	127
<i>Mean annual precipitation (inches):</i>	14.00

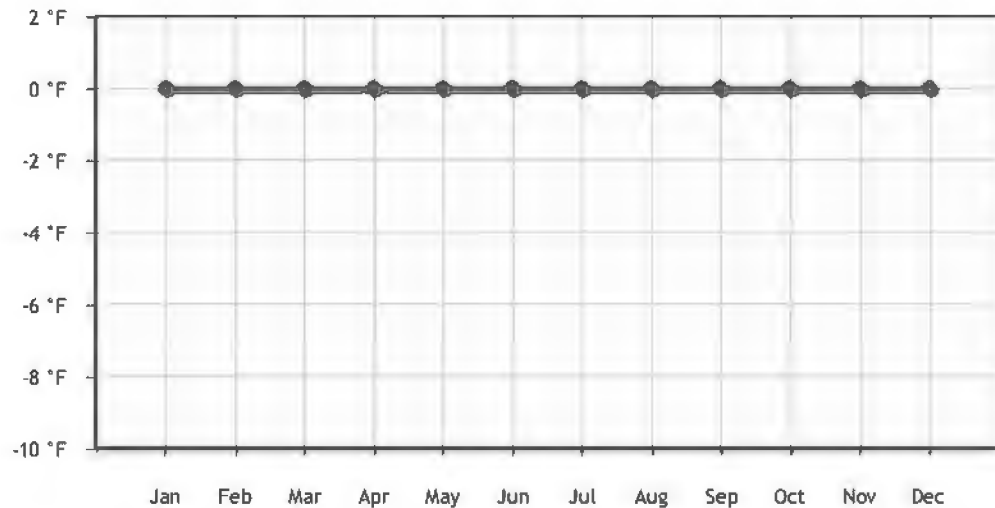
Monthly Precipitation (Inches):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>High</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>Low</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



Monthly Temperature (°F):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>High</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Low</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Influencing Water Features

Stream Type: None

Representative Soil Features

The soils of this site are moderately deep (greater than 20" to bedrock) to very deep, well-drained soils that formed in alluvium or alluvium over residuum. These soils have moderate, moderately rapid, or rapid permeability. The surface soil will vary from 3 to 6 inches deep and have one of the following textures: fine sandy loam, sandy loam, or loamy very fine sand. Coarser topsoils may be included if underlain by finer textured subsoil. 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: Bowbac, Decolney, Hargreave, Hiland, Julesburg, Keeline, Moskee, Terro, Turnercrest, Vonalee,

Other Soil Series correlated in MLRA 58B to this site include: Absted, Ascalon, Bankard, Bayard, Cambria, Clarkelen, Draknab, Forkwood, FortCollins, Garrett, Glenberg, Keyner, Jayem, Manter, Maysdorf, Noden, Nuncho, Otera, Pugsley, Satanta, Schooner, Southfork, Terry, and Vona

Surface texture: (1) Fine sandy loam
(2) Sandy loam

Subsurface texture group: Sandy

	<u>Minimum</u>	<u>Maximum</u>
<i>Surface fragments <=3" (% cover):</i>	0	0
<i>Surface fragments >3" (% cover):</i>	0	0
<i>Subsurface fragments <=3" (% volume):</i>	0	0
<i>Subsurface fragments >3" (% volume):</i>	0	0
<i>Drainage class:</i> Well drained to excessively drained		
<i>Permeability class:</i> Moderately rapid to rapid		

	<u>Minimum</u>	<u>Maximum</u>
<i>Depth (inches):</i>	20	60
<i>Available water capacity (inches):</i>	2.00	5.10
<i>Electrical conductivity (mmhos/cm):</i>	0	4
<i>Sodium adsorption ratio:</i>	0	5
<i>Calcium carbonate equivalent (percent):</i>	0	5
<i>Soil reaction (1:1 water):</i>	6.6	8.4

Plant Communities

Ecological Dynamics of the Site

As this site deteriorates, species such as threadleaf sedge, needleandthread, fringed sagewort and silver sagebrush will increase. Mid grasses such as prairie sandreed and Indian ricegrass will decrease in frequency and production.

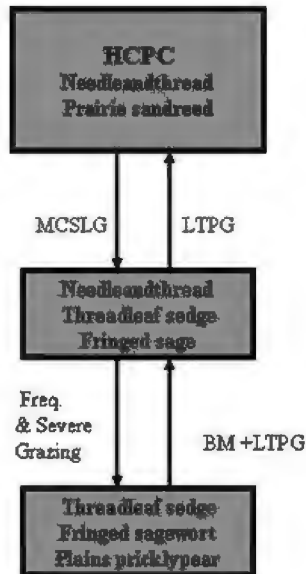
The Historic Climax Plant Community (description follows the plant community diagram) has been determined by study of rangeland relic areas, or areas protected from excessive disturbance. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical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

Site Type: Rangeland
MLRA: 58B - Northern Rolling High Plains

Sandy 10-14" P.Z.
R058BY150WY



BM - Brush Management (fire, chemical, mechanical)

Freq. & Severe Grazing - Frequent and Severe Utilization of the Cool-season Mid-grasses during the Growing Season

GLMT - Grazing Land Mechanical Treatment

LTPG - Long-term Prescribed Grazing

MCSLG - Moderate, Continuous Season-long Grazing

NU, NF - No Use and No Fire

PG - Prescribed Grazing (proper stocking rates with adequate recovery periods during the growing season)

VLTPG - Very Long-term Prescribed Grazing (could possibly take generations)

Na - found adjacent to a saline site

Needleandthread/Prairie Sandreed Plant Community

The interpretive plant community for this site is the Historic Climax Plant Community. This state evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. Potential vegetation is about 75% grasses or grass-like plants, 15% forbs, and 10% woody plants. The state is a mix of warm and cool season midgrasses. The major grasses include needleandthread, prairie sandreed, little bluestem, and Indian ricegrass. Other grasses occurring in the state include rhizomatous wheatgrasses, Sandberg bluegrass, blue grama, and threadleaf sedge. Silver sagebrush and green rabbitbrush are conspicuous components of this state.

The total annual production (air-dry weight) of this state is about 1200 pounds per acre, but it can range from about 750 lbs./acre in unfavorable years to about 1600 lbs./acre in above average years.

The state is stable and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought resistance. This is a sustainable plant community (site/soil stability, watershed function, and biologic integrity).

Transitions or pathways leading to other plant communities are as follows:

- Moderate, Continuous Season-Long grazing will convert the plant community to the Needleandthread/ Threadleaf sedge/ Fringed sagewort Vegetation State.
- Frequent and Severe grazing will convert the plant community to the Threadleaf sedge/ Fringed sagewort/ Plains Pricklypear Vegetation State.

Needleandthread/Prairie Sandreed Plant Community Plant Species Composition

<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Annual Production (pounds per acre)</u>	
					<u>Low</u>	<u>High</u>
1		streambank wheatgrass, thickspike wheatgrass	ELLAL	<i>Elymus lanceolatus ssp. lanceolatus</i>	75	160
		western wheatgrass	PASM	<i>Pascopyrum smithii</i>	75	160
2		Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	113	240

3				75	160
	little bluestem	SCSC	<u>Schizachyrium scoparium</u>	75	160
4				188	400
	needle and thread, needleandthread	HECO26	<u>Hesperostipa comata</u>	188	400
5				75	160
	Cusick's bluegrass, Cusick bluegrass	POCU3	<u>Poa cusickii</u>	75	160
6				150	320
	prairie sandreed	CALO	<u>Calamovilfa longifolia</u>	150	320
7				75	160
	threadleaf sedge	CAFI	<u>Carex filifolia</u>	75	160
8				188	400
	blue grama	BOGR2	<u>Bouteloua gracilis</u>	38	80
	hairy grama	BOHI2	<u>Bouteloua hirsuta</u>	38	80
	needleleaf sedge	CADU6	<u>Carex duriuscula</u>	38	80
	prairie Junegrass	KOMA	<u>Koeleria macrantha</u>	38	80
	Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	POSE	<u>Poa secunda</u>	38	80

Forb				<u>Annual Production (pounds per acre)</u>		
<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
9					113	240
		yarrow	ACHIL	<u>Achillea</u>	38	80
		textile onion	ALTE	<u>Allium textile</u>	38	80
		rosy pussytoes, rose pussytoes	ANRO2	<u>Antennaria rosea</u>	38	80
		prairie sagewort, fringed sagewort	ARFR4	<u>Artemisia frigida</u>	38	80
		aster	ASTER	<u>Aster</u>	38	80
		milkvetch	ASTRA	<u>Astragalus</u>	38	80
		tapertip hawksbeard	CRAC2	<u>Crepis acuminata</u>	38	80
		white prairie clover	DACA7	<u>Dalea candida</u>	38	80
		violet prairie clover, purple prairie clover	DAPU5	<u>Dalea purpurea</u>	38	80
		sulphur-flower buckwheat	ERUM	<u>Eriogonum umbellatum</u>	38	80
		scarlet beeblossom, scarlet gaura	GACO5	<u>Gaura coccinea</u>	38	80
		stemless mock goldenweed	HAAC	<u>Haplopappus acaulis(syn)</u>	38	80
		desertparsley, biscuitroot	LOMAT	<u>Lomatium</u>	38	80
		bluebells	MERTE	<u>Mertensia</u>	38	80
		large Indian breadroot, breadroot	PEES	<u>Pediomelum esculentum</u>	38	80
		scurfpea				
		upright prairie coneflower, prairie coneflower	RACO3	<u>Ratibida columnifera</u>	38	80
		American vetch	VIAM	<u>Vicia americana</u>	38	80

Shrub/Vine				<u>Annual Production (pounds per acre)</u>		
<u>Group</u>	<u>Group name</u>	<u>Common name</u>	<u>Symbol</u>	<u>Scientific name</u>	<u>Low</u>	<u>High</u>
10					38	80

Ecological Site Description System

big sagebrush	ARTR2	<i>Aristida tridentata</i>	38	80
silver sagebrush	ARCAG5	<i>Aristida cana ssp. cana</i>	38	80
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	CHV18	<i>Chrysothamnus viscidiflorus</i>	38	80
winterfat	KRLA2	<i>Kraeheninnickia lanata</i>	38	80
western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	38	80
sagebrush yucca, small sagebrush	YUGL	<i>Yucca glauca</i>	38	80

Plant Growth Curve

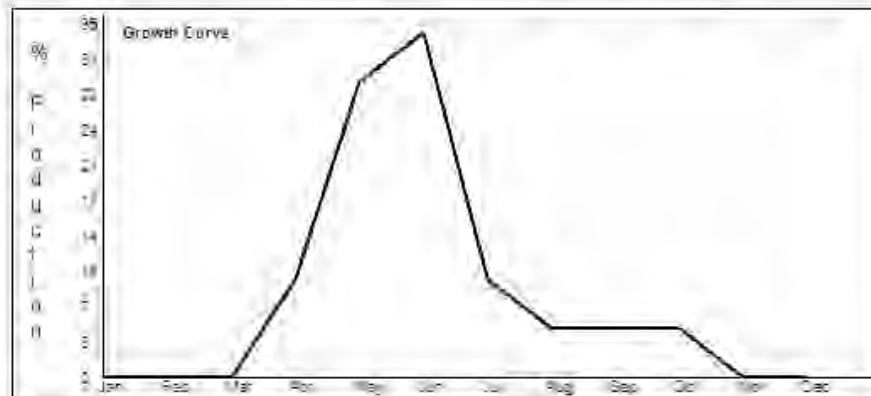
Growth curve
number: WY1401

Growth curve name: 10-14NP upland sites

Growth curve
description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	30	35	10	5	5	5	0	0

**Needleandthread/Threadleaf Sedge/Fringed Sagwort Plant Community**

This plant community is the result of moderate season long grazing. The understory of grass includes needleandthread, threadleaf sedge, and prairie junegrass. Fringed sagewort has increased. When compared to the Historic Climax Plant Community, prairie sandreed and Indian ricegrass have decreased. Threadleaf sedge, needleandthread and fringed sagewort have increased. This community is well suited to grazing by both domestic livestock and wildlife, during the spring, summer and fall.

The total annual production (air-dry weight) of this state is about 800 pounds per acre, but it can range from about 600 lbs./acre in unfavorable years to about 1000 lbs./acre in above average years.

The communities' soil biotic integrity and watershed is intact, although more than normal runoff may occur due to the sod forming vegetation.

Transitional pathways leading to other plant communities are as follows:

- Long-Term Prescribed grazing will return this state to near Historic Climax Plant Community condition. The sod forming nature of threadleaf sedge and needleandthread will make the transition to Historic Climax Plant Community difficult.
- Frequent and Severe grazing will convert this state to the Threadleaf sedge/ Fringed sagewort/ Plains pricklypear Vegetation State.

Plant Growth Curve

Growth curve number: WY1401

Growth curve name: 10-14NP upland sites

Growth curve description:

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	10	30	35	10	5	5	5	0	0



Threadleaf Sedge/Fringed Sagewort/Plains Pricklypear Plant Community

This plant community is the result of frequent and severe grazing. A sod of threadleaf sedge and needleandthread dominates it. Pricklypear cactus can become dense enough so that livestock

cannot graze forage growing within the cactus clumps. When the historic climax community is replaced by sod forming communities, grass production is reduced.

The total annual production (air-dry weight) of this state is about 650 pounds per acre, but it can range from about 500 lbs./acre in unfavorable years to about 800 lbs./acre in above average years.

The soil is generally well protected in this state. The biotic integrity may be reduced due to low vegetative production. The sod formed by these grasses is resistant to water infiltration. While this sod protects the site, off-site areas are affected by excessive runoff that may cause gully erosion. This sod is resistant to change and may require practices such as long-term prescribed grazing to return to a mild grass community.

Transitional pathways leading to other plant communities are as follows:

- Long-term Prescribed grazing with Brush Management will return this plant community to near Historic Climax Plant Community.

Plant Growth Curve

Growth curve number: WY1401

Growth curve name: 10-14MF upland sites

Growth curve description:

Percent Production by Month

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	30	35	10	5	5	5	0	0



Section II: Ecological Site Interpretations

Animal Community

Animal Community – Wildlife Interpretations

Historic Climax 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. However, topographical variations could provide some escape cover. When found adjacent to sagebrush dominated states, this plant community may provide brood rearing/foraging areas for sage grouse, as well as lek sites. Other birds that would frequent this plant community include western meadowlarks, horned larks, and golden eagles. Many grassland obligate small mammals would occur here.

Needleandthread/Threadleaf sedge/Fringed sagewort: These communities provide foraging for antelope and other grazers. They may be used as a foraging site by sage grouse if proximal to woody cover.

Threadleaf sedge/Fringed sagewort/Cactus: These communities provide limited grazing for antelope and other herbivores due to low production. They may be used as a foraging site by sage grouse if proximal to woody cover.

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 750-1600 .4

Threadleaf sedge/Needleandthread/Fringed sagewort 600-1000 .33

Threadleaf sedge/Fringed sagewort/Cactus 500-900 .2

* - 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.

Plant Preference by Animal Kind**Animal kind:** All antelope

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u><i>Achnatherum</i></u>													
Indian ricegrass	<u><i>hymenoides</i></u>	Leaves	N	N	N	P	P	P	N	N	N	D	D	D
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u><i>Andropogon gerardii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sand bluestem	<u><i>Andropogon hallii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u><i>Artemisia cana</i></u>	Leaves	P	P	P	P	P	P	P	P	P	P	P	P
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U U U U U U U U U U U U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D D D D D D D D D D D D
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T T T T T T T T T T T T
aster	<u><i>Aster</i></u>	Entire plant	U U U U U U U U U U U U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D D D P P P P P P D D D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P P P P P P P P P P P P
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P P P P P P P P P P P P
sideoats grama	<u><i>Bouteloua curtipendula</i></u>	Entire plant	D D D D D D D D D D D D
blue grama	<u><i>Bouteloua gracilis</i></u>	Leaves	D D D D D D D D D D D D
hairy grama	<u><i>Bouteloua hirsuta</i></u>	Leaves	D D D D D D D D D D D D
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	Leaves	D D D D D D D D D D D D
bluejoint, bluejoint reedgrass	<u><i>Calamagrostis canadensis</i></u>	Entire plant	U U U U U U U U U U U U
needleleaf sedge	<u><i>Carex duriuscula</i></u>	Entire plant	U U U U U U U U U U U U
threadleaf sedge	<u><i>Carex filifolia</i></u>	Leaves	P P P P P P P P P P P P
inland sedge	<u><i>Carex interior</i></u>	Entire plant	U U U U U U U U U U U U
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	U U U U U U U U U U U U
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Leaves	D D D D D D D D D D D D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	U U U U U U U U U U U U
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	Entire plant	D D D D D D D D D D D D
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D D D D D D D D D D D D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T T T T T T T T T T T T
poison hemlock	<u><i>Conium maculatum</i></u>	Entire plant	T T T T T T T T T T T T
tapertip hawksbeard	<u><i>Crepis acuminata</i></u>	Entire plant	D D D D D D D D D D D D
white prairie clover	<u><i>Dalea candida</i></u>	Entire plant	P P P P P P P P P P P P
violet prairie clover, purple prairie clover	<u><i>Dalea purpurea</i></u>	Entire plant	P P P P P P P P P P P P
tufted hairgrass	<u><i>Deschampsia caespitosa(syn)</i></u>	Entire plant	D D D D D D D D D D D D
inland saltgrass	<u><i>Distichlis spicata</i></u>	Entire plant	U U U U U U U U U U U U
bearded wheatgrass	<u><i>Elymus caninus</i></u>	Leaves	D D D D D D D D D D D D
Canada wildrye	<u><i>Elymus canadensis</i></u>	Leaves	D D D D D D D D D D D D
silverberry	<u><i>Elaeagnus commutata</i></u>	Entire plant	U U U U U U U U U U U U
squirreltail, bottlebrush squirreltail	<u><i>Elymus elymoides ssp. elymoides</i></u>	Entire plant	U U U U U U U U U U U U
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D D D D D D D D D D D D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	D D D D D D D D D D D D

prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Rosa woodsii var. woodsii</u>														
Woods' rose	<u>woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
willow	<u>Salix</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Schizachyrium scoparium</u>														
little bluestem	<u>scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
alkali sacaton	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>														
prairie thermopsis	<u>var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	E	M	A	M	J	J	A	S	O	N	D
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	E	M	A	M	J	J	A	S	O	N	D
Indian ricegrass	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	J	E	M	A	M	J	J	A	S	O	N	D
textile onion	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u>Andropogon gerardii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand bluestem	<u>Andropogon hallii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U

birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

sideoats grama	<u><i>Bouteloua curtipendula</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u><i>Bouteloua hirsuta</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u><i>Calamagrostis canadensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
needleleaf sedge	<u><i>Carex duriuscula</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u><i>Carex filifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u><i>Carex interior</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
prairie sandreed	<u><i>Calamovilfa longifolia</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
plains reedgrass	<u><i>Calamagrostis montanensis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u><i>Carex nardina</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Nebraska sedge	<u><i>Carex nebrascensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
yellow rabbitbrush, green rabbitbrush, low rabbitbrush, Douglas rabbitbrush	<u><i>Chrysothamnus viscidiflorus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
water hemlock	<u><i>Cicuta</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u><i>Conium maculatum</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
tapertip hawksbeard	<u><i>Crepis acuminata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
white prairie clover	<u><i>Dalea candida</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple prairie clover	<u><i>Dalea purpurea</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass	<u><i>Deschampsia caespitosa(syn)</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
inland saltgrass bearded	<u><i>Distichlis spicata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
wheatgrass	<u><i>Elymus caninus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Canada wildrye	<u><i>Elymus canadensis</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u><i>Elaeagnus commutata</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush squirreltail	<u><i>Elymus elymoides ssp. elymoides</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
streambank wheatgrass, thickspike wheatgrass	<u><i>Elymus lanceolatus ssp. lanceolatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
slender wheatgrass	<u><i>Elymus trachycaulus</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
horsetail	<u><i>Equisetum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
rubber rabbitbrush	<u><i>Ericameria nauseosa</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower buckwheat	<u><i>Eriogonum umbellatum</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
scarlet beeblossom, scarlet gaura	<u><i>Gaura coccinea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u><i>Glycyrrhiza lepidota</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock goldenweed	<u><i>Haplopappus acaulis(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

needle and thread, needleandthread	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u>Krascheninnikovia lanata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u>Leymus cinereus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u>Mertensia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
plains muhly, stoneyhills muhly	<u>Muhlenbergia cuspidata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
green needlegrass	<u>Nassella viridula</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot															
scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u>Pinus ponderosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
plains cottonwood	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>E</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>E</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P

greasewood	<u><i>Sarcobatus vermiculatus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u><i>Schizachyrium scoparium</i></u>															
little bluestem	<u><i>scoparium</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
alkali sacaton	<u><i>Sporobolus airoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: all cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
alkali cordgrass	<u><i>Spartina gracilis</i></u>	Leaves	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All cattle

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis	<u><i>Thermopsis rhombifolia var. annulocarpa(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u><i>Triglochin</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Fruits/Seeds	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All deer

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u><i>Andropogon gerardii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
sand bluestem	<u><i>Andropogon hallii</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
tarragon, green														
sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot														
sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
Wyoming big sagebrush	<u><i>Artemisia tridentata ssp. wyomingensis</i></u>	Entire plant	P	P	P	P	P	P	D	D	D	D	D	D
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T

willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Schizachyrium scoparium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
little bluestem	<u>Sisyrinchium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
blue-eyed grass	<u>Sporobolus airoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
alkali sacaton	<u>Sporobolus cryptandrus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
sand dropseed	<u>Spartina gracilis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
alkali cordgrass	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
Pursh seepweed															
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Thermopsis rhombifolia var. annulocarpa(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis arrowgrass	<u>Triglochin</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u>Typha angustifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u>Typha latifolia</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u>Vicia americana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u>Yucca glauca</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D

Animal kind: All horses

<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>
yarrow	<u>Achillea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
	<u>Achnatherum hymenoides</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Indian ricegrass	<u>Allium textile</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
textile onion	<u>Andropogon gerardii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
big bluestem	<u>Andropogon hallii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
sand bluestem														
rosy pussytoes, rose pussytoes	<u>Antennaria rosea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u>Artemisia cana ssp. cana</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u>Artemisia dracunculus</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u>Artemisia frigida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u>Artemisia pedatifida</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u>Aristida purpurea var. longiseta</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u>Artemisia tridentata</u>	Entire plant	U	U	U	N	N	N	N	N	N	U	U	U
aster	<u>Aster</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u>Astragalus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u>Atriplex canescens</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u>Atriplex gardneri</u>	Entire plant	D	D	D	U	U	U	U	U	U	D	D	D
sideoats grama	<u>Bouteloua curtipendula</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u>Bouteloua gracilis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u>Bouteloua hirsuta</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u>Buchloe dactyloides(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint reedgrass	<u>Calamagrostis canadensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
needleleaf sedge	<u>Carex duriuscula</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U
threadleaf sedge	<u>Carex filifolia</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D
inland sedge	<u>Carex interior</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D

prairie sandreed	<u>Calamovilfa longifolia</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	<u>Calamagrostis montanensis</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
plains reedgrass	<u>Carex nardina</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
spike sedge	<u>Carex nebrascensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Nebraska sedge																			
yellow rabbitbrush,																			
green rabbitbrush, low																			
rabbitbrush, Douglas	<u>Chrysothamnus viscidiflorus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
rabbitbrush																			
water hemlock	<u>Cicuta</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
poison hemlock	<u>Conium maculatum</u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
tapertip																			
hawksbeard	<u>Crepis acuminata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
white prairie clover	<u>Dalea candida</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
violet prairie clover, purple																			
prairie clover	<u>Dalea purpurea</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	<u>Deschampsia caespitosa(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
tufted hairgrass																			
inland saltgrass	<u>Distichlis spicata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
bearded																			
wheatgrass	<u>Elymus caninus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Canada wildrye	<u>Elymus canadensis</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
silverberry	<u>Elaeagnus commutata</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
squirreltail, bottlebrush																			
squirreltail	<u>Elymus elymoides ssp. elymoides</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
streambank																			
wheatgrass, thickspike	<u>Elymus lanceolatus ssp. lanceolatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
wheatgrass																			
slender																			
wheatgrass	<u>Elymus trachycaulus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
horsetail	<u>Equisetum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
rubber																			
rabbitbrush	<u>Ericameria nauseosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
sulphur-flower																			
buckwheat	<u>Eriogonum umbellatum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
scarlet																			
beeblossom,																			
scarlet gaura	<u>Gaura coccinea</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
American licorice	<u>Glycyrrhiza lepidota</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
stemless mock	<u>Haplopappus acaulis(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
goldenweed																			
needle and thread,																			
needleandthread	<u>Hesperostipa comata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Rocky Mountain																			
juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u>Krascheninnikovia lanata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
basin wildrye	<u>Leymus cinereus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	U U U U U U U U U U U U
bluebells	<u>Mertensia</u>	Entire plant	D D D D D D D D D D D D
plains muhly, stoneyhills muhly	<u>Muhlenbergia cuspidata</u>	Entire plant	D D D D D D D D D D D D
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U U U U U U U U U U U U
green needlegrass	<u>Nassella viridula</u>	Entire plant	P P P P P P P P P P P P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D D D D D D D D D D D D
large Indian breadroot, breadroot			
scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D D D D D D D D D D D D
ponderosa pine	<u>Pinus ponderosa</u>	Entire plant	U U U U U U U U U U U U
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P P P P P P P P P P P P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P P P P P P P P P P P P
	<u>Populus deltoides ssp. monilifera</u>		
plains cottonwood		Entire plant	D D D D D D D D D D D D
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D D D D D D D D D D D D
Animal kind: all horses			
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J F M A M J J A S O N D</u>
Sandberg bluegrass	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	D D D D D D D D D D D D
Animal kind: All horses			
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J F M A M J J A S O N D</u>
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P P P P P P P P P P P P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P P P P P P P P P P P P
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	D D D D D D D D D D D D
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D D D D D D D D D D D D
	<u>Rosa woodsii var. woodsii</u>		
Woods' rose		Entire plant	U U U U U U U U U U U U
willow	<u>Salix</u>	Entire plant	D D D D D D D D D D D D
Animal kind: all horses			
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J F M A M J J A S O N D</u>
greasewood	<u>Sarcobatus vermiculatus</u>	Leaves	U U U U U U U U U U U U
Animal kind: All horses			
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J F M A M J J A S O N D</u>
little bluestem	<u>Schizachyrium scoparium</u>	Entire plant	P P P P P P P P P P P P
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	D D D D D D D D D D D D

alkali sacaton	<u><i>Sporobolus airoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Animal kind: all horses																		
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>				
alkali cordgrass	<u><i>Spartina gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Animal kind: All horses																		
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>				
Pursh seepweed	<u><i>Suaeda calceoliformis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u><i>Symphoricarpos occidentalis</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie thermopsis arrowgrass	<u><i>Thermopsis rhombifolia var. annulocarpa(syn)</i></u> <u><i>Triglochin</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Animal kind: All sheep																		
<u>Common name</u>	<u>Scientific name</u>	<u>Plant part</u>	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>				
yarrow	<u><i>Achillea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Indian ricegrass	<u><i>Achnatherum hymenoides</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
textile onion	<u><i>Allium textile</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
big bluestem	<u><i>Andropogon gerardii</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
sand bluestem	<u><i>Andropogon hallii</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
rosy pussytoes, rose pussytoes	<u><i>Antennaria rosea</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
silver sagebrush	<u><i>Artemisia cana</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
tarragon, green sagewort	<u><i>Artemisia dracunculus</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie sagewort, fringed sagewort	<u><i>Artemisia frigida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
birdfoot sagebrush	<u><i>Artemisia pedatifida</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Fendler threeawn, red threeawn	<u><i>Aristida purpurea var. longiseta</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
big sagebrush	<u><i>Artemisia tridentata</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Wyoming big sagebrush	<u><i>Artemisia tridentata ssp. wyomingensis</i></u>	Entire plant	P	P	P	D	D	D	D	D	D	D	D	P	P	P	P	P
twogrooved milkvetch	<u><i>Astragalus bisulcatus</i></u>	Entire plant	N	N	N	T	T	T	T	T	T	T	T	T	T	T	T	T
aster	<u><i>Aster</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
milkvetch	<u><i>Astragalus</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
fourwing saltbush	<u><i>Atriplex canescens</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Gardner's saltbush	<u><i>Atriplex gardneri</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
blue grama	<u><i>Bouteloua gracilis</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
hairy grama	<u><i>Bouteloua hirsuta</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
buffalograss	<u><i>Buchloe dactyloides(syn)</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
bluejoint, bluejoint	<u><i>Calamagrostis</i></u>																	

iris	<u>Iris</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Baltic rush	<u>Juncus balticus(syn)</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Rocky Mountain juniper	<u>Juniperus scopulorum</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
prairie Junegrass	<u>Koeleria macrantha</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
winterfat	<u>Krascheninnikovia lanata</u>	Entire plant	P	P	P	D	D	D	D	D	D	D	P	P	P				
basin wildrye	<u>Leymus cinereus</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
desertparsley, biscuitroot	<u>Lomatium</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
bluebells	<u>Mertensia</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
plains muhly, stoneyhills muhly	<u>Muhlenbergia cuspidata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
mat muhly	<u>Muhlenbergia richardsonis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
green needlegrass	<u>Nassella viridula</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
western wheatgrass	<u>Pascopyrum smithii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
large Indian breadroot, breadroot scurfpea	<u>Pediomelum esculentum</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
ponderosa pine	<u>Pinus ponderosa</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Sandberg bluegrass	<u>Poa canbyi(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Cusick's bluegrass, Cusick bluegrass	<u>Poa cusickii</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	<u>Populus deltoides ssp. monilifera</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
plains cottonwood																			
Sandberg bluegrass, big bluegrass, Canby bluegrass, alkali bluegrass	<u>Poa secunda</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Poa secunda ssp. juncifolia(syn)</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Sandberg bluegrass																			
bluebunch wheatgrass	<u>Pseudoroegneria spicata</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Nuttall's alkaligrass	<u>Puccinellia nuttalliana</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
upright prairie coneflower, prairie coneflower	<u>Ratibida columnifera</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
skunkbush sumac	<u>Rhus trilobata</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Rosa woodsii var. woodsii</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Woods' rose																			
willow	<u>Salix</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
greasewood	<u>Sarcobatus vermiculatus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
	<u>Schizachyrium scoparium</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
little bluestem																			
blue-eyed grass	<u>Sisyrinchium</u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
sand dropseed	<u>Sporobolus cryptandrus</u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Pursh seepweed	<u>Suaeda calceoliformis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
western snowberry	<u>Symphoricarpos occidentalis</u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

	<u><i>Thermopsis rhombifolia</i></u>																			
prairie thermopsis	<u><i>var. annulocarpa(syn)</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
arrowgrass	<u><i>Triglochin</i></u>	Entire plant	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
narrowleaf cattail	<u><i>Typha angustifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
broadleaf cattail	<u><i>Typha latifolia</i></u>	Entire plant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
American vetch	<u><i>Vicia americana</i></u>	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
soapweed yucca, small soapweed	<u><i>Yucca glauca</i></u>	Entire plant	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

Legend: P=Preferred; D=Desirable; U=Undesirable; N=Not consumed; E=Emergency; T=Toxic; X=Used, but degree of utilization unknown

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B, with localized areas in hydrologic group C. Infiltration potential for this site varies from moderately rapid to rapid depending on soil hydrologic group and ground cover. Runoff varies from low to moderate. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short-grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Part 630, NRCS National Engineering Handbook for detailed hydrology information).

Rills and gullies should not typically be present. Water flow patterns should be barely distinguishable if at all present. Pedestals are only slightly present in association with bunchgrasses. 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 variety 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.

Supporting Information

Associated Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
Shallow Sandy (SwSy)	<u>R058BY166WY</u>	

Similar Sites

<u>Site name</u>	<u>Site ID</u>	<u>Site narrative</u>
------------------	----------------	-----------------------

Sandy (Sy)

R058BY250WY Sandy 15-17" Northern Plains P.Z. has higher production.**State Correlation***This site has been correlated with the following states: **MT*****Inventory Data References**

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site include: Glen Mitchell, Range Management Specialist, NRCS; Chuck Ring, 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, and USDA NRCS Soil Surveys from various counties.

Inventory Data References

Data Source Number of Records Sample Period State County
 SCS-RANGE-417 12 1971-1994 WY Campbell & others
 Ocular estimates 5 1990-1999 WY Campbell & others

Original Site Description Approval

<u>Author</u>	<u>Date</u>	<u>Approval</u>	<u>Date</u>
G. Mitchell	10/31/2002	E. Bainter	3/7/2008

Reference Sheet**Author(s)/participant(s):****Contact for lead author:**

Date: 4/1/2005 **MLRA:** 058B **Ecological Site:** Sandy (Sy) 10-14" Northern Plains Precipitation Zone R058BY150WY This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community cannot be used to identify the ecological site.

Composition (indicators 10 and 12) based on: X Annual Production, Foliar Cover, Biomass

Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community and natural disturbance regimes within the reference state, when appropriate and (3) cite data. Continue descriptions on separate sheet.

1. Number and extent of rills: Rills should not be present.

2. Presence of water flow patterns: Barely observable.

3. Number and height of erosional pedestals or terracettes: Essentially non-existent.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, standing dead, lichen, moss, plant canopy are not bare ground):** Bare ground is 20-30% occurring in small areas throughout site.
-
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:** None
-
7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.
-
8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Plant cover and litter is at 70% or greater of soil surface and maintains soil surface integrity. Soil Stability class is anticipated to be 4 or greater.
-
9. **Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness):** Use Soil Series description for depth and color of A-horizon.
-
10. **Effect on plant community composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Grass canopy and basal cover should reduce raindrop impact and slow overland flow providing increased time for infiltration to occur. Healthy deep rooted native grasses enhance infiltration and reduce runoff. Infiltration is Moderately Rapid to Rapid.
-
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 or soil surface crusting should be present.
-
12. **Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to) with dominants and sub-dominants and "others" on separate lines:**
Dominant: Mid stature Cool Season Grasses = Mid Stature Warm Season Grasses >
Short stature Grasses/Grasslike > Shrubs > Forbs
Sub-dominant:
Other:
Additional:
-
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very Low.

14. Average percent litter cover (%) and depth (inches): Average litter cover is 25-35% with depths of 0.25 to 1.0 inches

15. Expected annual production (this is TOTAL above-ground production, not just forage production): 1300 lbs/ac

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 indicator, we are describing what is NOT expected in the reference state for the ecological site: Threadleaf sedge, Fringed sagewort, Prickly Pear, Broom Snakeweed, Yucca, and Species found on Noxious Weed List.

17. Perennial plant reproductive capability: All species are capable of reproducing.

Reference Sheet Approval

Approval

E. Bainter

Date

3/7/2008

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APPENDIX B

NATURAL RESOURCES CONSERVATION SERVICE NETWORK EFFECTS DIAGRAM

nrcs_314_brush_management_NED	nrcs_533_pumping_plant_NED
nrcs_338_prescribed_burning_NED	nrcs_550_range_planting_NED
nrcs_342_critical_area_planting_NED	nrcs_561_heavy_use_area_protection_NED
nrcs_348_diversion_dam_NED	nrcs_574_spring_development_NED
nrcs_378_pond_NED	nrcs_580_streambank_protection_NED
nrcs_382_fence_NED	nrcs_587_structure_water_control_NED
nrcs_390_riparian_herbaceous_cover_NED	nrcs_610_salinity_sodic_management_NED
nrcs_391_riparian_forest_buffer_NED	nrcs_612_tree_shrub_establishment_NED
nrcs_396_fish_passage_NED	nrcs_614_watering_facility_NED
nrcs_410_grade_stabilization_structure_NED	nrcs_642_water_well_NED
nrcs_430_irrigation_water_conveyance_pipeline_NED	nrcs_643_restoration_management_rare_declining_habitats_NED
nrcs_436_water_harvesting_catchment_NED	nrcs_644_wetland_wildlife_habitat_management_NED
nrcs_447_irrigation_system_tailwater_recovery_NED	nrcs_645_upland_wildlife_habitat_management_NED
nrcs_449_irrigation_water_management_NED	nrcs_656_constructed_wetland_NED
nrcs_516_livestock_water_pipeline_NED	nrcs_657_wetland_restoration_NED
nrcs_521_pond_sealing_lining_NED	nrcs_658_wetland_creation_NED
nrcs_528_prescribed_grazing_NED	nrcs_659_wetland_enhancement_NED

BRUSH MANAGEMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 314



BRUSH MANAGEMENT

Brush management is the removal, reduction, or manipulation of tree and shrub species.

PRACTICE INFORMATION

Brush management is designed to achieve the optimum level of control of the target woody species and protection of the desired species. This is accomplished by mechanical, chemical, biological, or a combination of these techniques. The practice is also planned and applied to meet the habitat requirements of fish and wildlife.

Brush management is applied to accomplish one or more of the following:

- Restore natural plant community balance
- Create the desired plant community
- Reduce competition for space, moisture, and sunlight to favor the desired species
- Manage noxious woody plants

- Restore vegetation to control erosion and sedimentation, improve water quality, and enhance streamflow
- Maintain or enhance wildlife habitat including habitat for threatened and endangered species
- Improve forage accessibility, quality, and quantity for domestic and wild animals
- Protect life and property from wildfire
- Improve visibility and access for handling livestock

COMMON ASSOCIATED PRACTICES

Brush Management is commonly used in a Conservation Management System with the following practices:

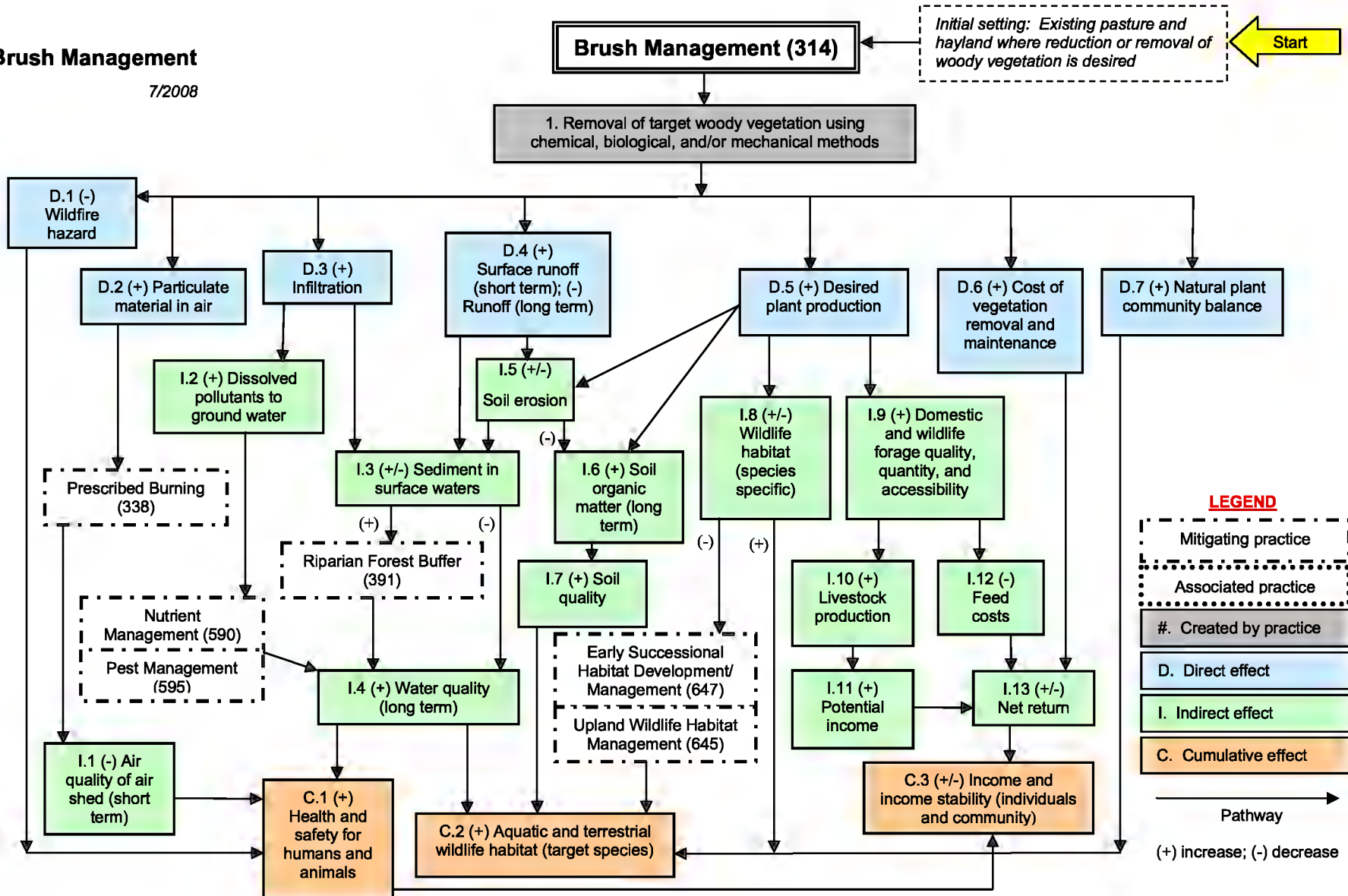
- Pest Management (595)
- Prescribed Grazing (528)

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Brush Management

7/2008



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

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PRESCRIBED BURNING

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 338



PRESCRIBED BURNING

Prescribed burning is applying controlled fire to a predetermined area of land.

PRACTICE INFORMATION

This practice applies to all land uses for the following purposes:

- Control undesirable vegetation
- Prepare sites for planting or seeding
- Control plant diseases
- Reduce wildfire hazards
- Improve wildlife habitat
- Improve forage quantity and quality
- Slash and debris removal following forest management activities
- Enhance seed/seedling production
- Facilitate distribution of grazing and browsing animals

This is a highly specialized practice that requires intensive training and sufficient support personnel

and equipment. A safe successful burn must be timed for proper humidity, wind conditions, air temperature, and fuel conditions (ignitable vegetation). Safety precautions are carefully planned before the burn and monitored during the burn. Existing barriers, such as streams, lakes, roads, wetlands, and constructed firebreaks, are important considerations in planning the practice.

COMMON ASSOCIATED PRACTICES

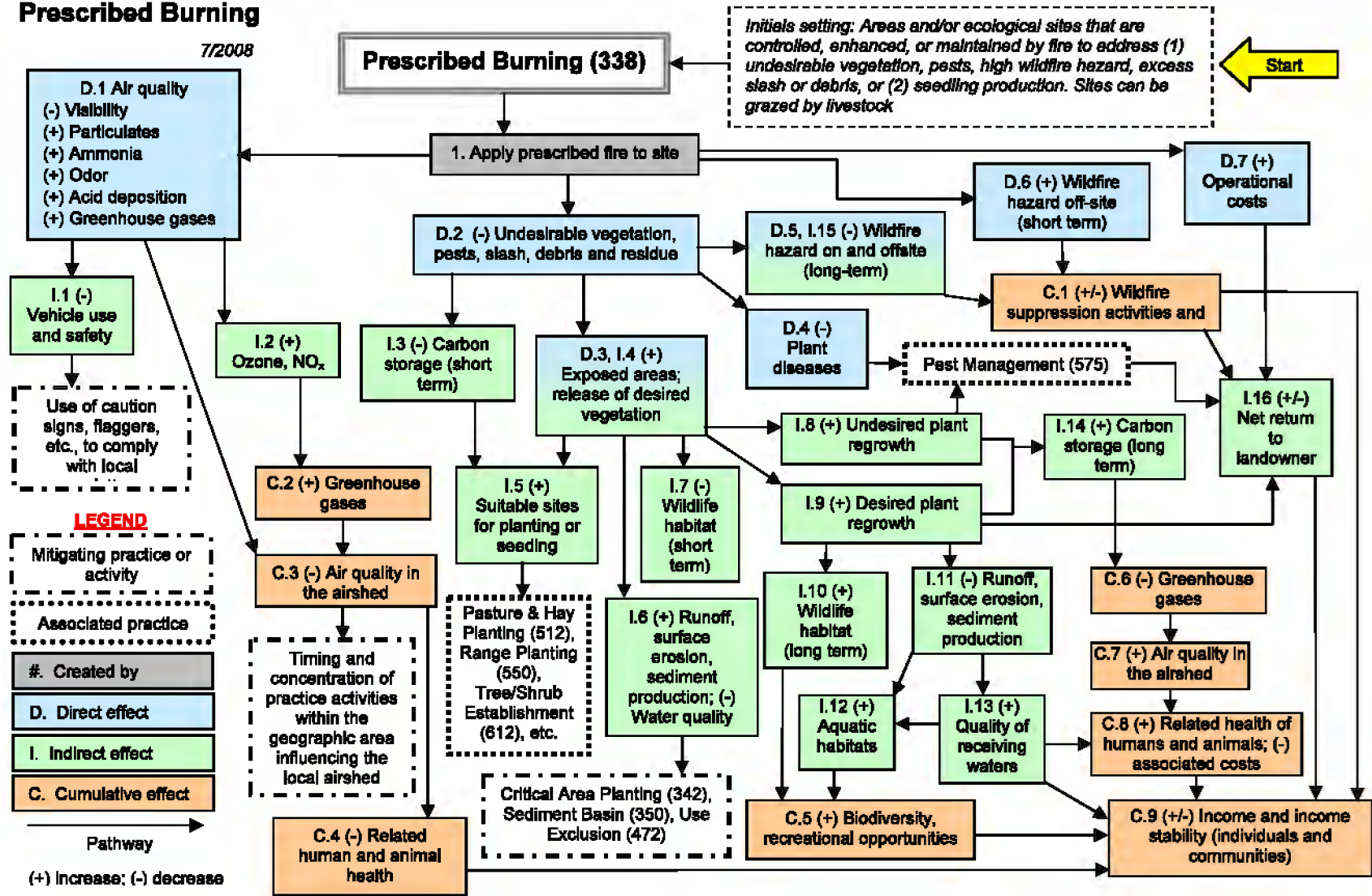
Prescribed Burning is commonly used in a Conservation Management System with practices such as Forest Stand Improvement (666), Forest Trails and Landings (655), Pest Management (595), and other associated harvesting, planting, and seeding practices and activities.

For more information, refer to the practice standard in the NRCS Field Office Technical Guide and associated specifications and design criteria.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Prescribed Burning

7/2008



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CRITICAL AREA PLANTING

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 342



CRITICAL AREA PLANTING

Critical area planting is planting vegetation on critically eroding areas that require extraordinary treatment.

PRACTICE INFORMATION

This practice is used on highly erodible areas that cannot be stabilized by ordinary planting techniques and, if left untreated, may cause severe erosion or sediment damage. Examples of critical areas include the following:

- Dams, dikes, levees, and other construction sites with very steep slopes
- Mine spoil and surface-mined land with poor quality soil and possibly chemical problems
- Agriculture land with severe gullies requiring specialized planting techniques and management

Erosion control is the primary consideration for plant material selection. However, a broad choice of grass, trees, shrubs, and vines are usually available and adapted for most sites. Wildlife and beautification are additional considerations that influence planning decisions on a site needing this practice.

The following decisions must be made when planning this practice:

- Function or use of the site following establishment
- Species of plants to establish
- Methods and rates of planting
- Fertilizer, lime, and soil amendments necessary for establishment and growth of the plants
- Mulching requirements
- Planting site preparation
- Irrigation requirement
- Site management following establishment of the vegetation

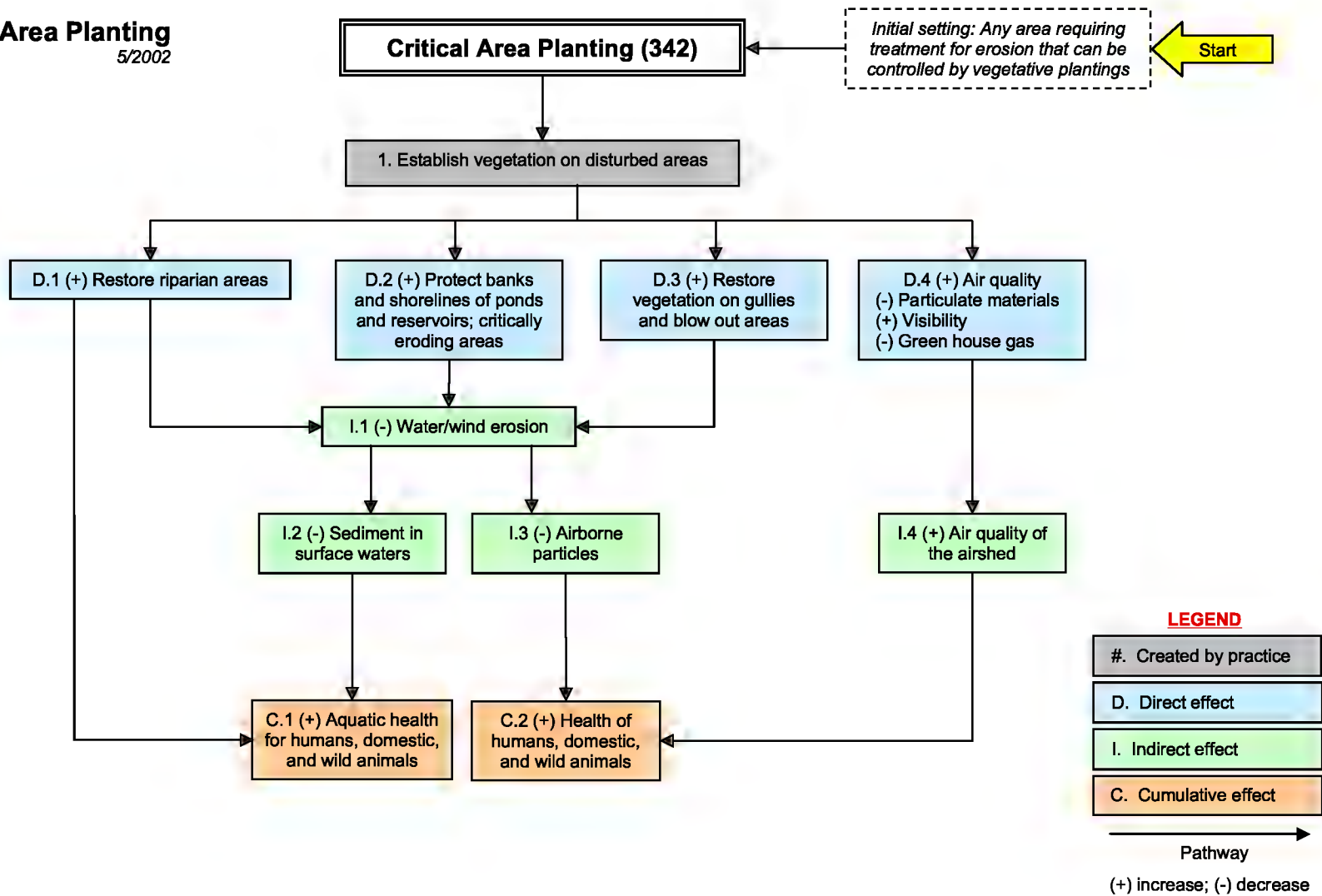
COMMON ASSOCIATED PRACTICES

Critical Area Planting is commonly used in a Conservation Management System on a variety of land uses with practices such as Dam (402), Dike (356), and erosion control practices.

For more information, refer to the practice standard in the NRCS Field Office Technical Guide and associated specifications and design criteria.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Critical Area Planting
5/2002



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Dam, Diversion

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - practice code 348



DEFINITION

A diversion dam is a structure built to divert all or part of the water from a watercourse into another watercourse for conservation purposes.

PRACTICE INFORMATION

A diversion dam is designed to divert water from a watercourse such as a waterway or stream into another watercourse, irrigation canal, stream, water-spreading system, or another waterway.

The purpose of the practice is to improve the beneficial use of water, or divert

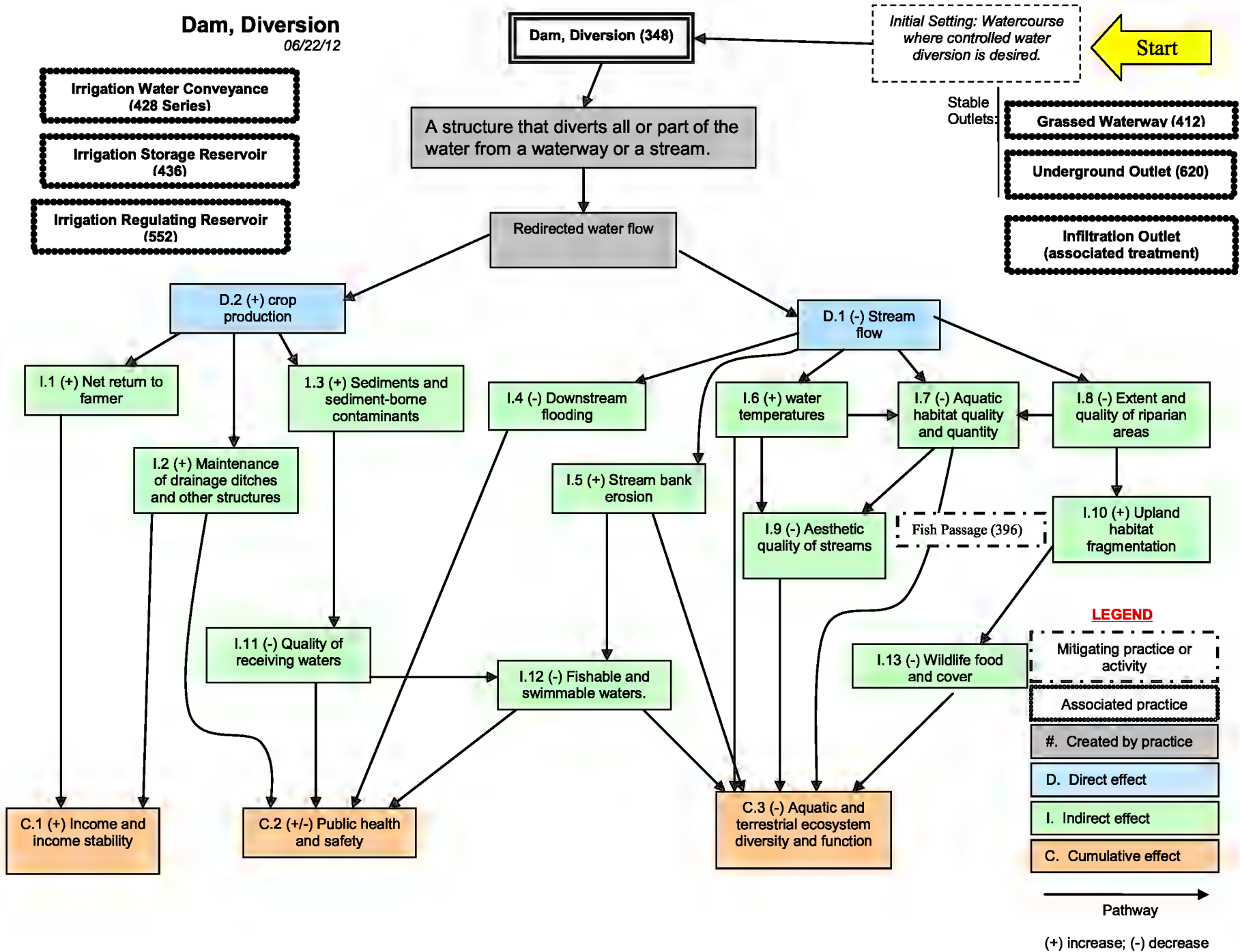
damaging flows to another watercourse that is more stable or otherwise more capable of reducing damage. One of the more common uses of this practice is diverting water from a stream or river into a canal used for irrigation purposes.

The impacts of a proposed diversion dam are evaluated to assure water quality, fish and wildlife, aesthetics, and other environmental concerns are considered in the design and layout of the structure (s). The practice is also carefully evaluated to assure compliance with state and local laws concerning natural watercourses.

Additional information including design criteria and specifications are in the local NRCS Field Office Technical Guide.

Dam, Diversion

06/22/12



POND

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 378



POND

A pond is a water impoundment made by constructing a dam or excavating a pit or dugout.

PRACTICE INFORMATION

If a dam is constructed, the pond is referred to as an embankment pond; if the pond storage is achieved solely by excavating material, the pond is referred to as an excavated pond.

The purpose of this type of pond is to provide water for livestock, recreation, and fish and wildlife. Other uses include providing a water supply for things such as fire control and crop or orchard spraying.

The Pond practice standard applies where failure will not result in loss of life, damage to homes, commercial buildings, main highways, railroads, or interruption of public utilities; the product of the storage (acre/feet) times the effective height of the dam is less than 3,000 and the effective height of the dam is 35 feet or less.

The site must be such that runoff from the design storm can pass safely through a natural or constructed spillway. The drainage area must be protected from erosion that would significantly reduce the expected life of the structure and be large enough so that surface runoff and ground water flow will normally maintain an adequate supply of water in the pond. The water quality must be suitable for the intended use of the water.

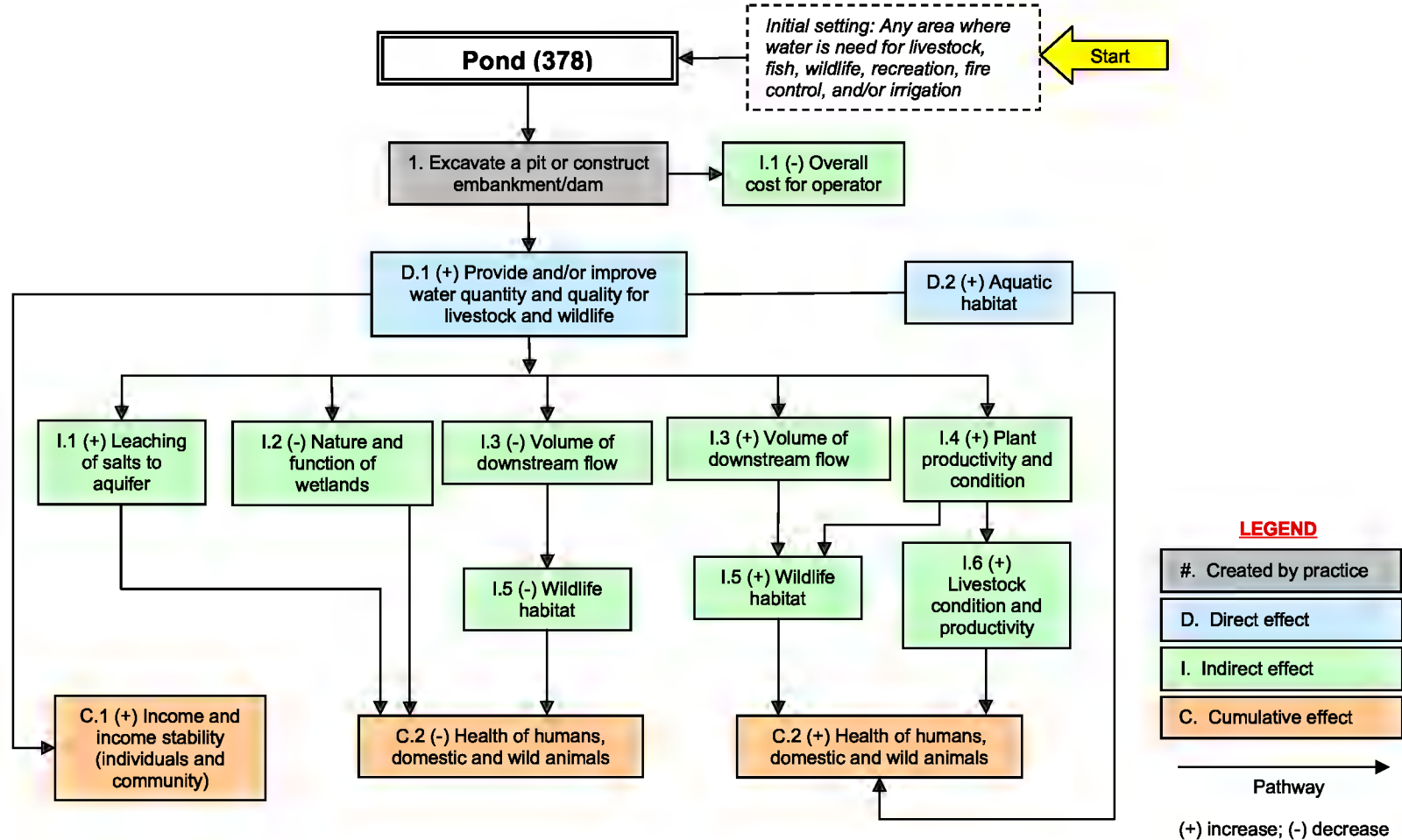
COMMON ASSOCIATED PRACTICES

Pond is commonly planned as part of a Conservation Management System with Prescribed Grazing (528), Fence (382), Access Control (472), and Critical Area Planting (342).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated practice specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Pond (378)
5/2002



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FENCE

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 382



FENCE

A fence is a constructed barrier to animals or people.

PRACTICE INFORMATION

This practice may be applied to any area where management of animal or human movement is needed.

A wide variety of types of fencing has developed. However, fencing type, materials and construction quality is always designed and installed to assure the fence will meet the intended purpose and longevity requirements of the project.

A standard fence is constructed of either barbed or smooth wire suspended by posts with support structures. Other types include woven wire, electric fence, and suspension fences which are designed with heavy, but widely spaced posts and support structures. Designs for many types of fences are available at the local NRCS field office.

Things to consider when planning a fence include:

- Topography. For ease of maintenance, avoid as much irregular terrain as possible
- Animal and human movement needs and safety
- State and local laws that may apply to boundary fences
- Animal handling, watering, and feeding requirements
- Soil erosion potential and feasibility of fence construction when planning fences on steep or irregular terrain

COMMON ASSOCIATED PRACTICES

Fence is commonly used in a Conservation Management System with the following practices:

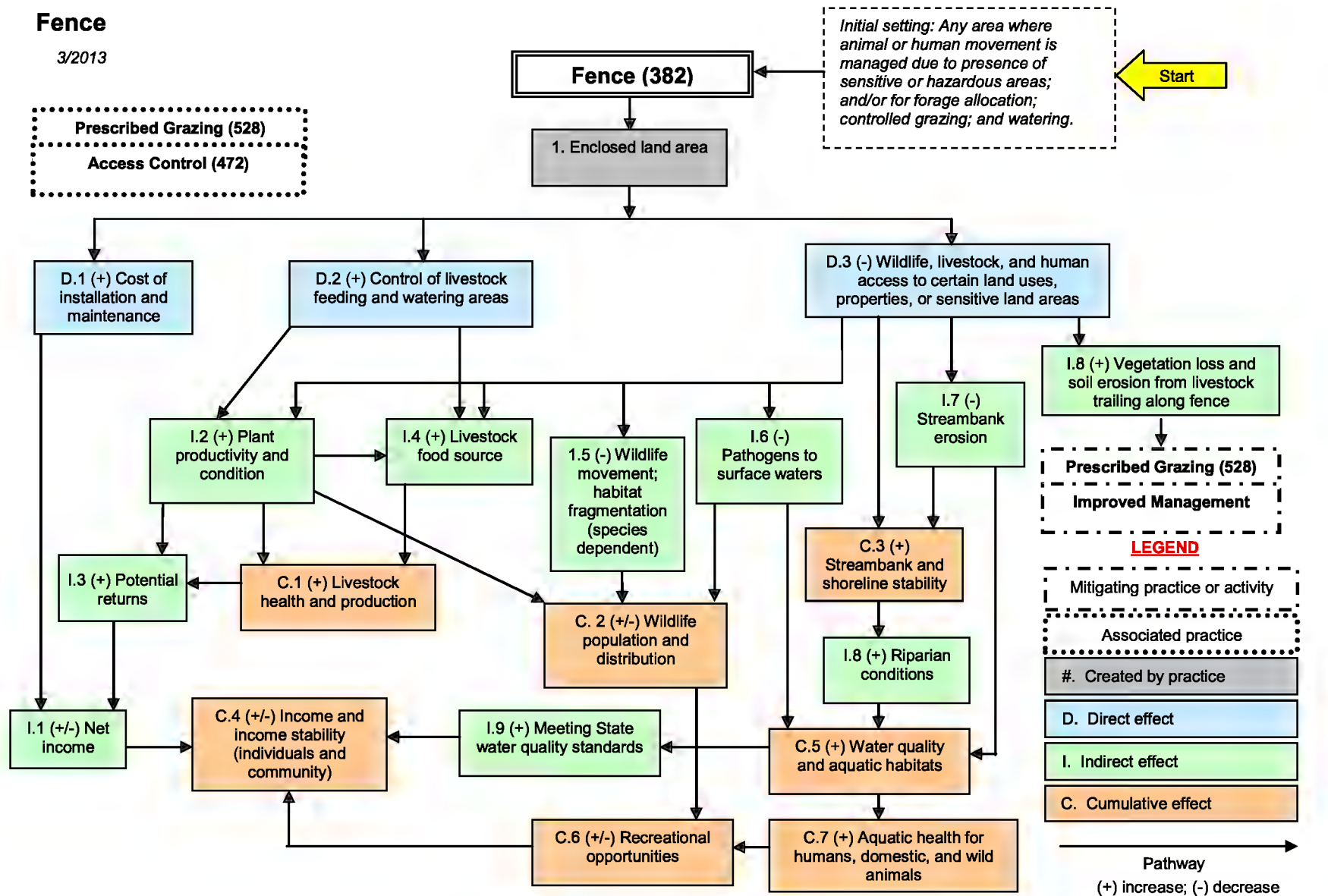
- Prescribed Grazing (528)
- Access Control (472)

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Fence

3/2013



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RIPARIAN HERBACEOUS COVER

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 390



RIPARIAN HERBACEOUS COVER

Riparian herbaceous cover is establishment and maintenance of grasses, grass-like plants, and forbs that are tolerant of intermittent flooding or saturated soils and that are established or managed in the transitional zone between terrestrial and aquatic habitats.

PRACTICE INFORMATION

This practice is used on lands along water courses or at the boundary of water bodies or wetlands where the natural or desired plant community is dominated by herbaceous vegetation; the ecosystem has been disturbed and the natural plant community is missing, changed, or has been converted to agricultural crops, lawns, or other high maintenance vegetation; or invasive species dominate.

The purposes of this practice include:

- Provision of food, shelter, shading substrate, access to adjacent habitats
- Nursery habitat and pathways for movement by resident and nonresident

aquatic, semi-aquatic, and terrestrial organisms

- Improvement and protection of water quality
- Stabilization of streambanks and shorelines
- Increased net carbon storage in the biomass and soil

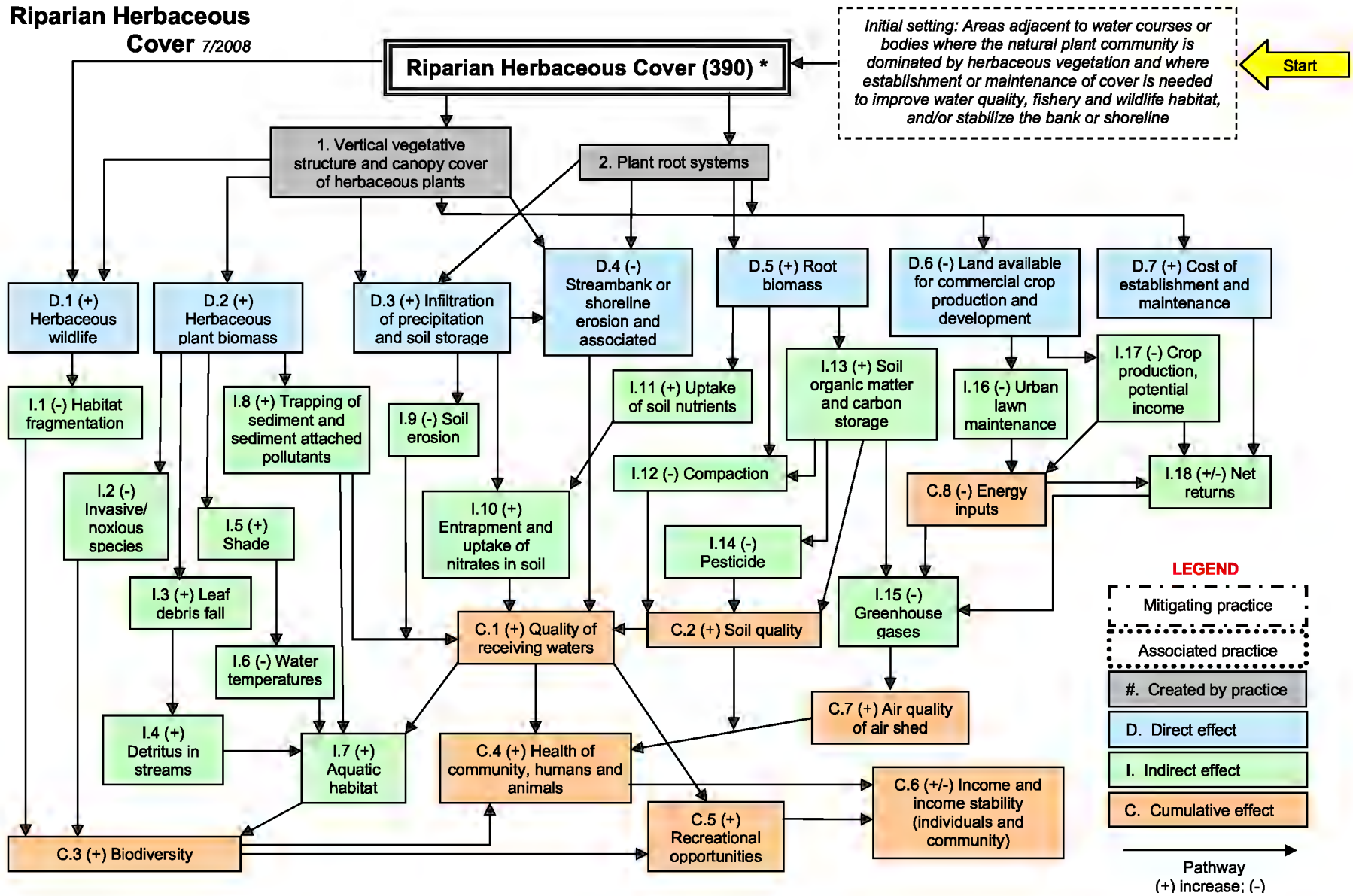
COMMON ASSOCIATED PRACTICES

Riparian Herbaceous Cover is commonly used in a Conservation Management System with other practices such as Conservation Cover (327), Fence (382), Use Exclusion (472), Tree/Shrub Establishment (612), Wetland Wildlife Habitat Management (644), Prescribed Grazing (528), Streambank and Shoreline Protection (580), Stream Crossing (578), and Watering Facility (614).

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Riparian Herbaceous Cover 7/2008



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

*Effects start at establishment and continue through to fully functional condition

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

RIPARIAN FOREST BUFFER

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 391



RIPARIAN FOREST BUFFER

A riparian forest buffer is an area of trees and/or shrubs located adjacent to a body of water. The vegetation extends outward from the water body for a specified distance necessary to provide a minimum level of protection and/or enhancement.

PRACTICE INFORMATION

This practice applies to areas adjacent to permanent or intermittent streams, lakes, ponds, wetlands, and areas associated with ground water recharge.

The riparian forest buffer is a multi-purpose practice design to accomplish one or more of the following:

- Create shade to lower water temperatures and improve habitat for aquatic animals
- Provide a source of debris necessary for healthy robust populations of aquatic organisms and wildlife
- Act as a buffer to filter out sediment, organic material, fertilizer, pesticides, and other pollutants that may adversely impact the water body, including shallow ground water

Dominant vegetation consists of existing or planted trees and shrubs suited to the site and purpose(s) of the practice. Grasses and forbs that come in naturally further enhance the wildlife habitat and filtering effect of the practice. Headcuts and streambank erosion should be assessed and treated appropriately before establishing the riparian forest buffer. Specifications for each installation are based on a thorough field investigation of each site.

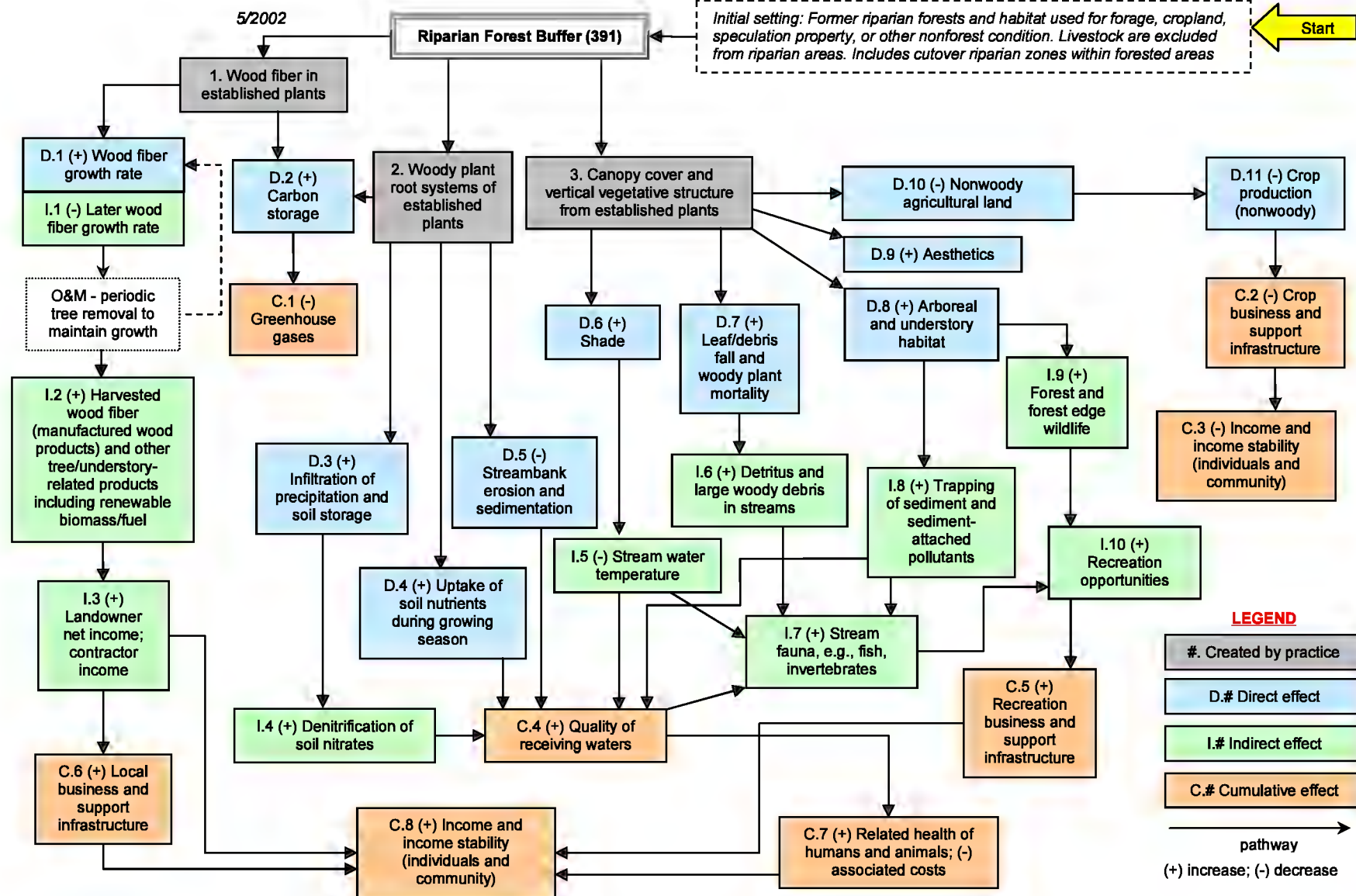
COMMON ASSOCIATED PRACTICES

Riparian Forest Buffer is commonly used in Conservation Management Systems on a variety of land uses. Associated practices may include Riparian Herbaceous Cover (390), Stream Habitat Improvement and Management (395), Streambank and Shoreline Protection (580), and Tree/Shrub Establishment (612).

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Riparian Forest Buffer



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

FISH PASSAGE

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 396



FISH PASSAGE

Fish passage is the modification or removal of barriers that restrict or prevent movement or migration of fish. A fish passage allows fish to move upstream and downstream.

PRACTICE INFORMATION

The purpose of this practice is to allow upstream and downstream movement of fish past barriers where feasible or desirable.

This practice applies to all rivers, streams, and outlets of ponds or lakes where barriers impede desired fish passage. Modification or removal of barriers, particularly on large river systems, may significantly affect hydrology, for example, by creating impoundments or increasing seasonal inundation in the flood plain.

The context and intensity of these impacts must be considered when planning any project involving a fish passage.

COMMON ASSOCIATED PRACTICES

Fish Passage is commonly used in a Conservation Management System with the following practices:

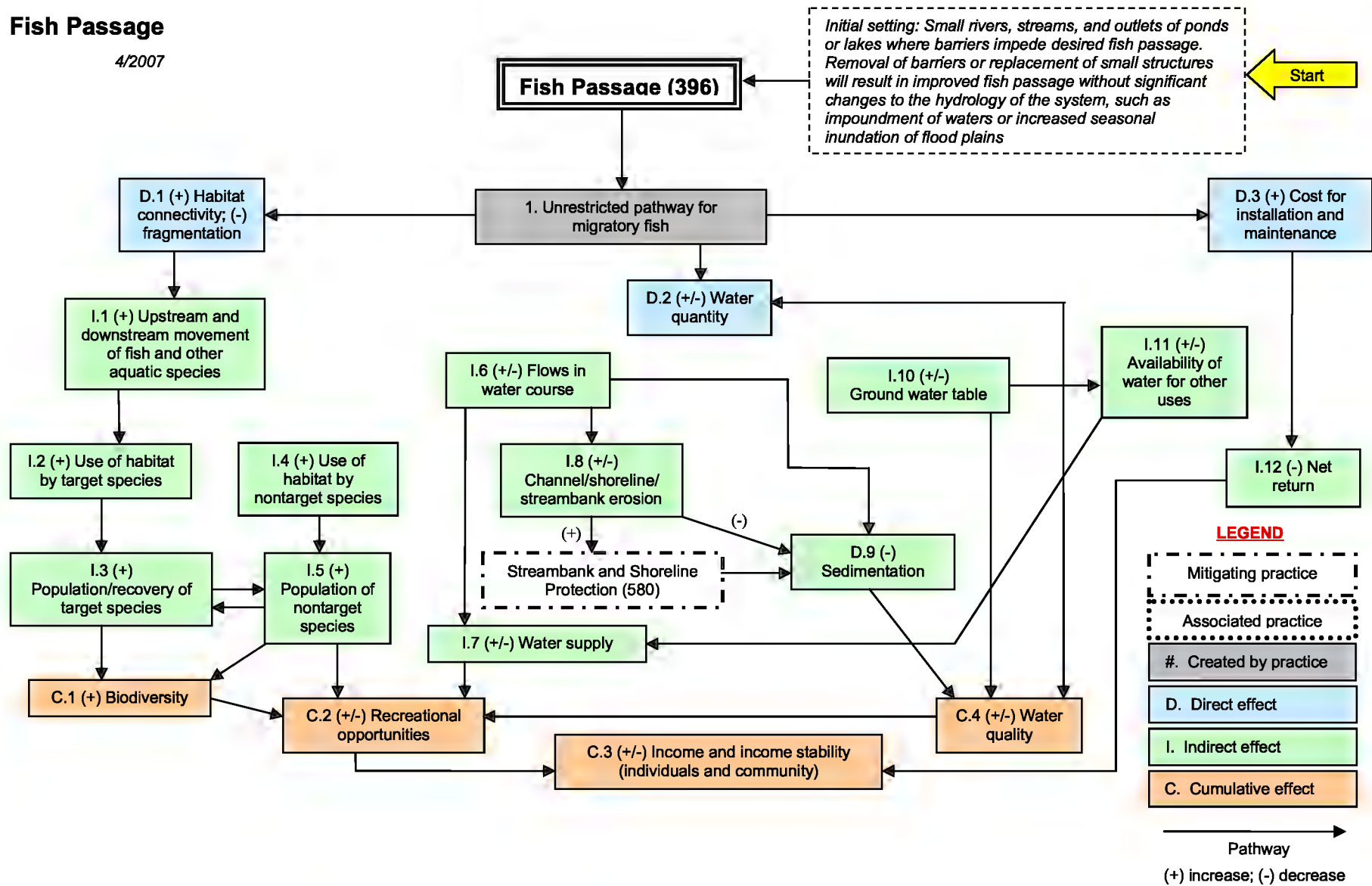
- Obstruction Removal (500)
- Riparian Forest Buffer (391)
- Streambank and Shoreline Protection (580)
- Stream Habitat Improvement Management (395)

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Fish Passage

4/2007



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The scope of the practice implementation and resulting effects are limited to those described in the "initial setting." Projects involving larger river systems, impoundment of waters, increased seasonal inundation of flood plains, or any other changes to the hydrologic system may need to be evaluated in a site-specific EA.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

GRADE STABILIZATION STRUCTURE

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 410



GRADE STABILIZATION STRUCTURE

A grade stabilization structure is used to control the grade and headcutting in natural or artificial channels.

PRACTICE INFORMATION

Grade stabilization structures are installed to stabilize the channel grade and control erosion to prevent the formation or advance of gullies and headcuts. The practice is used in areas where structures are necessary to stabilize the site. Grade stabilization structures are not designed to regulate flow or water levels in a channel area.

Special attention is given to enhancing fish and wildlife habitat where enhancement is practical. The practice is also helpful in reducing pollution from sedimentation.

Grade stabilization structures are located so that the elevation of the inlet of the spillway is set at

an elevation that will control upstream headcutting.

A wide range of alternative types of structures are available for this practice, and an intensive site investigation is required to plan and design an appropriate grade stabilization structure for a specific site.

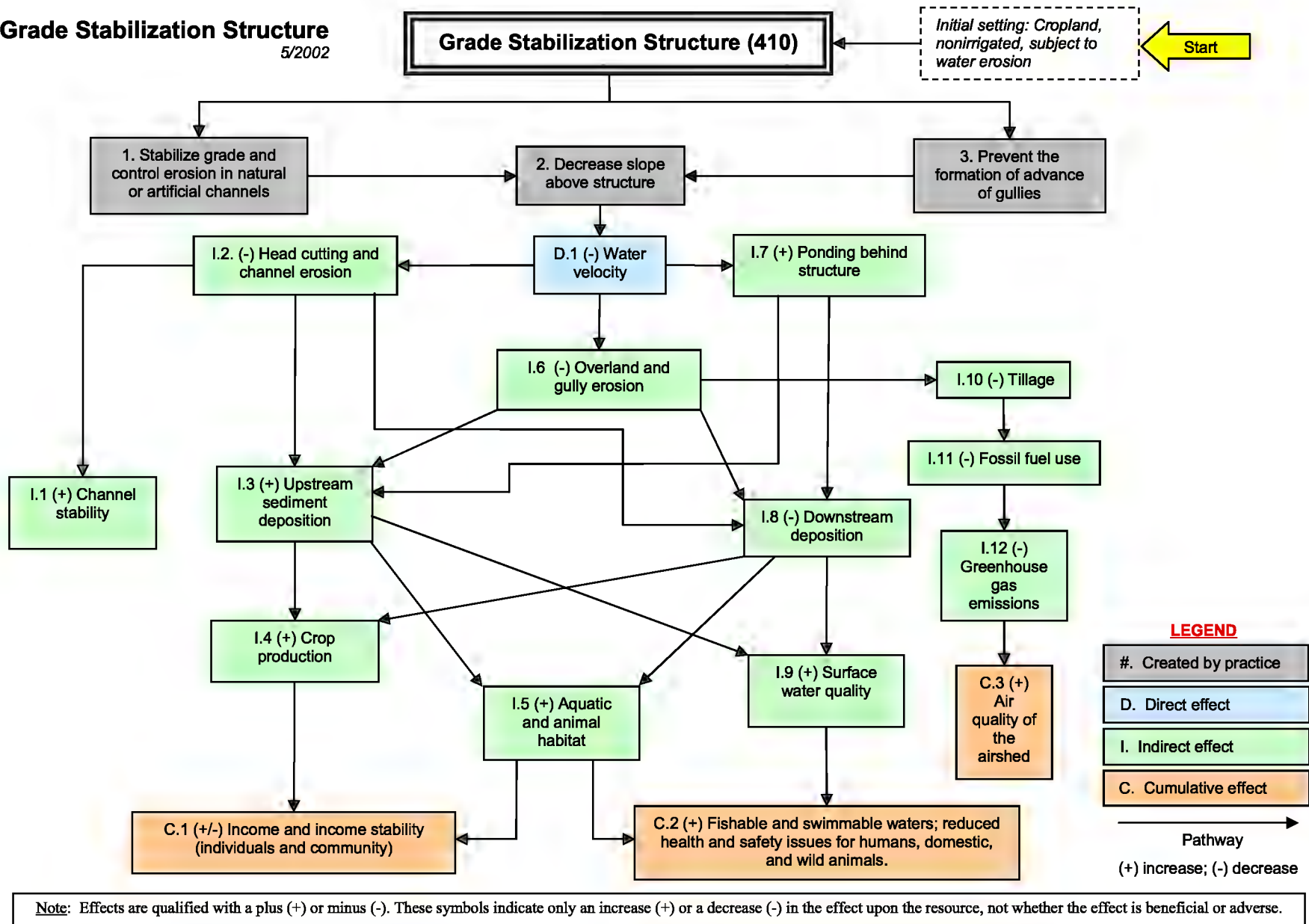
COMMON ASSOCIATED PRACTICES

Grade Stabilization Structure is commonly used in a Conservation Management System on a variety of land uses with practices such as Nutrient Management (590), Pest Management (595), Contour Farming (330), and other erosion control practices.

For more information, refer to the practice standard in the NRCS Field Office Technical Guide and associated specifications and design criteria.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Grade Stabilization Structure
5/2002



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

IRRIGATION WATER CONVEYANCE—PIPELINE

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 430 (AA–GG)



IRRIGATION WATER CONVEYANCE—PIPELINE

Irrigation water conveyance includes pipelines and appurtenances installed as an integral part of an irrigation system.

PRACTICE INFORMATION

The purpose of this practice is to efficiently deliver or convey water from a source of supply to points of application or storage to facilitate management of irrigation water. The practice reduces erosion, conserves water, and protects water quality.

Underground pipelines serve as an integral part of the irrigation water distribution system and significantly improve the overall efficiency of the system.

The practice standard applies to water conveyance and distribution pipelines installed above or below ground.

This standard does not apply to multiple outlet pipes, except main line pipes that have multiple risers with distant point of discharge.

This practice requires proper design and installation to function properly.

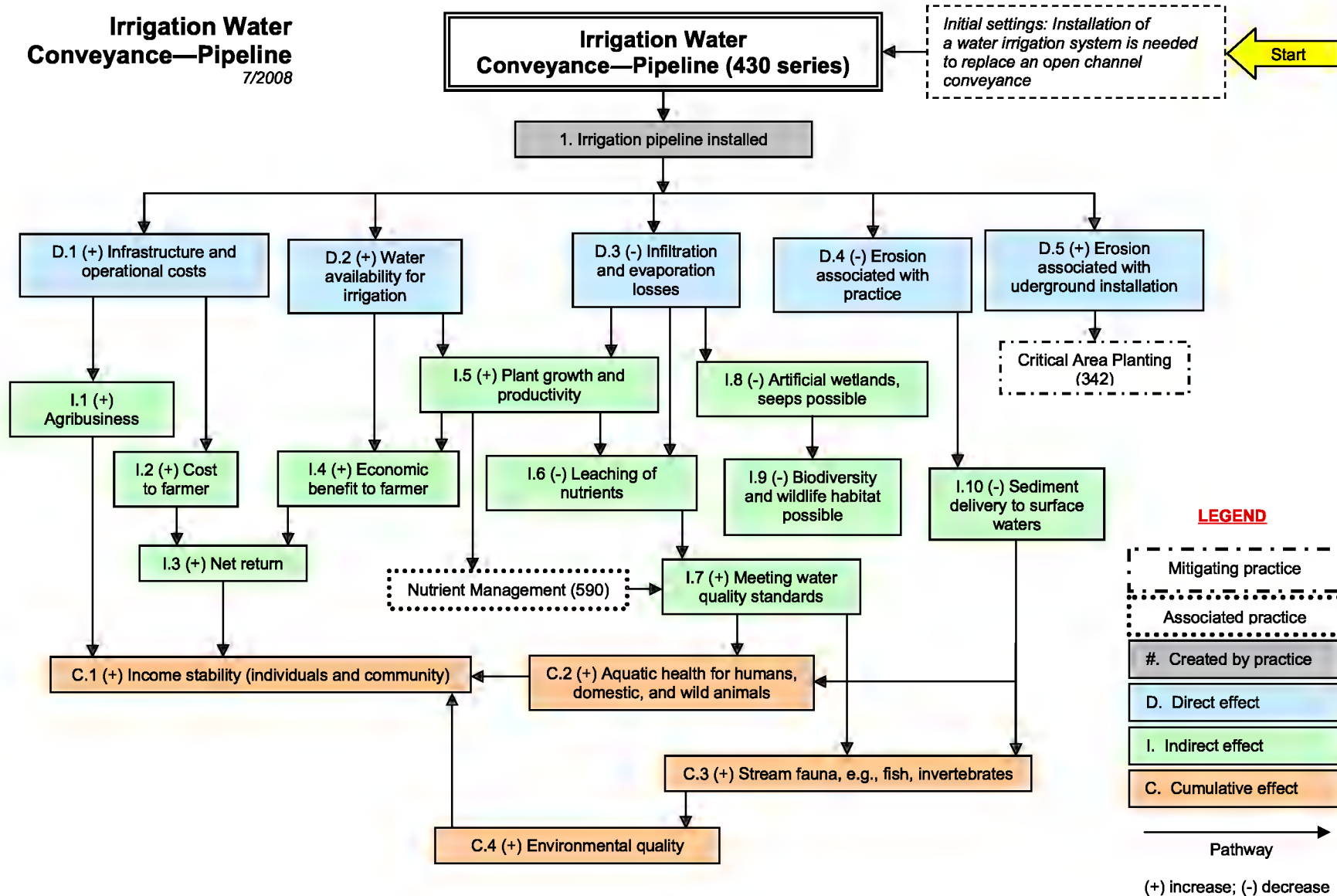
COMMON ASSOCIATED PRACTICES

Irrigation Water Conveyance–Pipeline is commonly used in a Conservation Management System with practices such as Irrigation Water Management (449), Pumping Plant (533), Irrigation System (441, 442, 443, 447), Critical Area Planting (342), and Nutrient Management (590).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Irrigation Water Conveyance—Pipeline
7/2008



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

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WATER HARVESTING CATCHMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 436



WATER HARVESTING CATCHMENT

A water harvesting catchment is a facility for collecting and storing runoff from precipitation.

PRACTICE INFORMATION

The purpose of a water harvesting catchment is to provide water for livestock, fish, wildlife, and/or other uses by sealing contributing areas to increase, collect, and store runoff water for future use.

This practice involves sealing a watershed or portion of a watershed to increase, collect, and store runoff water. It may also involve installing curbs and/or diversions to direct the runoff water to a storage facility. The contributing area may be rock outcrops, paved areas, or other impervious areas that yield high rates of runoff. The contributing area, or apron, may require sealing with material such as asphalt, wax, rubber, plastic, concrete, metal, or other impervious material.

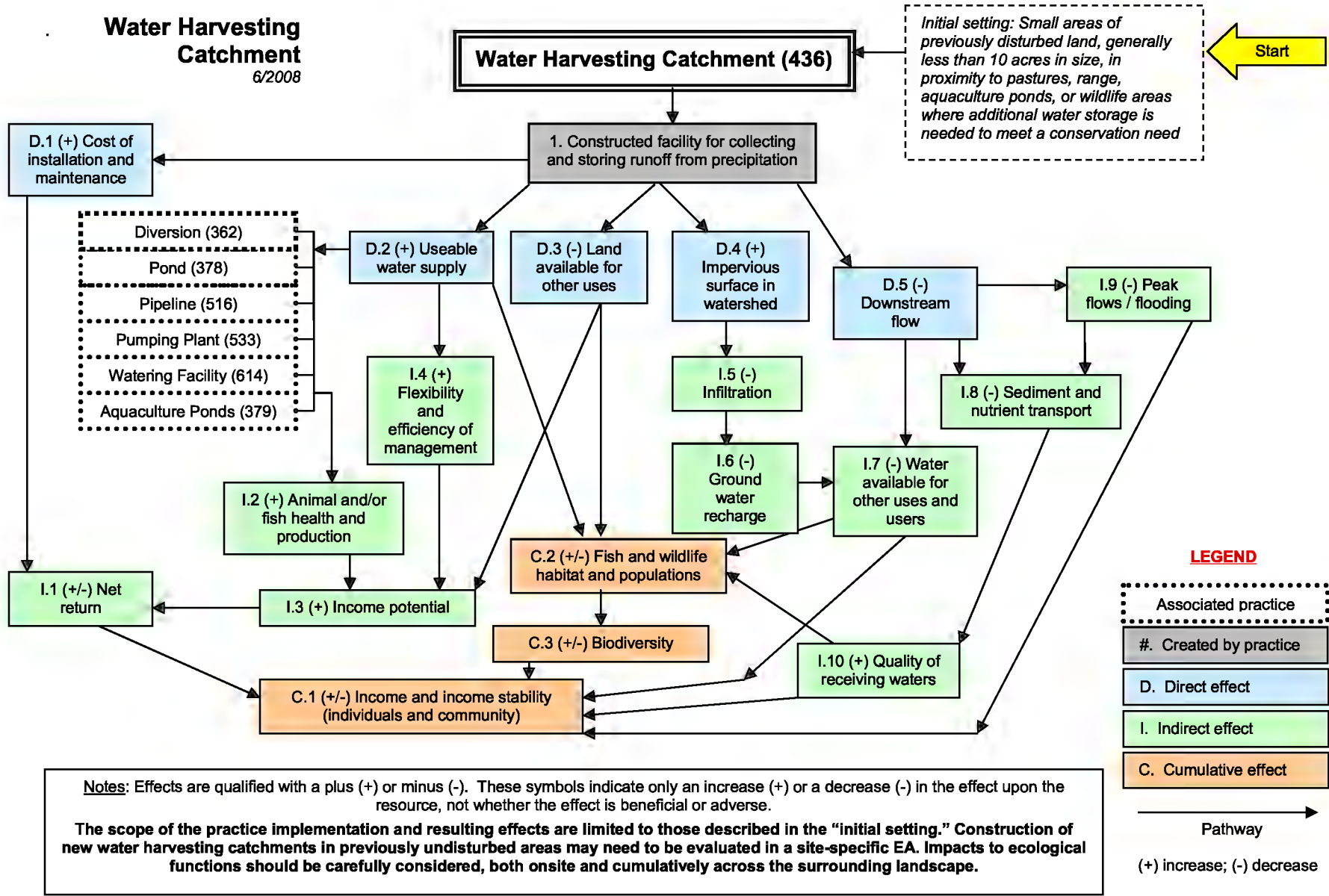
COMMON ASSOCIATED PRACTICES

Water Harvesting Catchment is commonly used as part of a Conservation Management System with the following practices: Diversion (362), Pipeline (516), Pumping Plant (533), Pond (378), Watering Facility (614), Aquaculture Ponds (379), and Critical Area Treatment (342).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated practice specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Water Harvesting Catchment
6/2008



Notes: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The scope of the practice implementation and resulting effects are limited to those described in the "initial setting." Construction of new water harvesting catchments in previously undisturbed areas may need to be evaluated in a site-specific EA. Impacts to ecological functions should be carefully considered, both onsite and cumulatively across the surrounding landscape.

LEGEND

- Associated practice
- #. Created by practice
- D. Direct effect
- I. Indirect effect
- C. Cumulative effect

→ Pathway

(+) increase; (-) decrease

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

IRRIGATION SYSTEM, TAILWATER RECOVERY

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 447



TAILWATER RECOVERY

An irrigation tailwater recovery system is an irrigation system in which all facilities utilized for the collection, storage, and transportation of irrigation tailwater for reuse have been installed.

PRACTICE INFORMATION

Tailwater recovery involves the collection of recoverable irrigation runoff flows and is applied to conserve irrigation water supplies and/or improve offsite water quality. It applies to systems where recoverable irrigation runoff flows can be anticipated under current or expected management practices.

Facilities are needed to store the collected water and to convey water from the storage facility to a point of entry back into the irrigation system. Additional storage may be required to provide adequate retention time for the breakdown of chemicals in the runoff waters or to provide for

sediment deposition. Allowable retention times are specific to the particular chemical used.

Seepage from a storage facility is controlled through natural soil or commercial liners, soil additives or other approved methods when chemical-laden waters are stored. Protection of system components from storm events and excessive sedimentation are also considered in the planning and design of a system.

COMMON ASSOCIATED PRACTICES

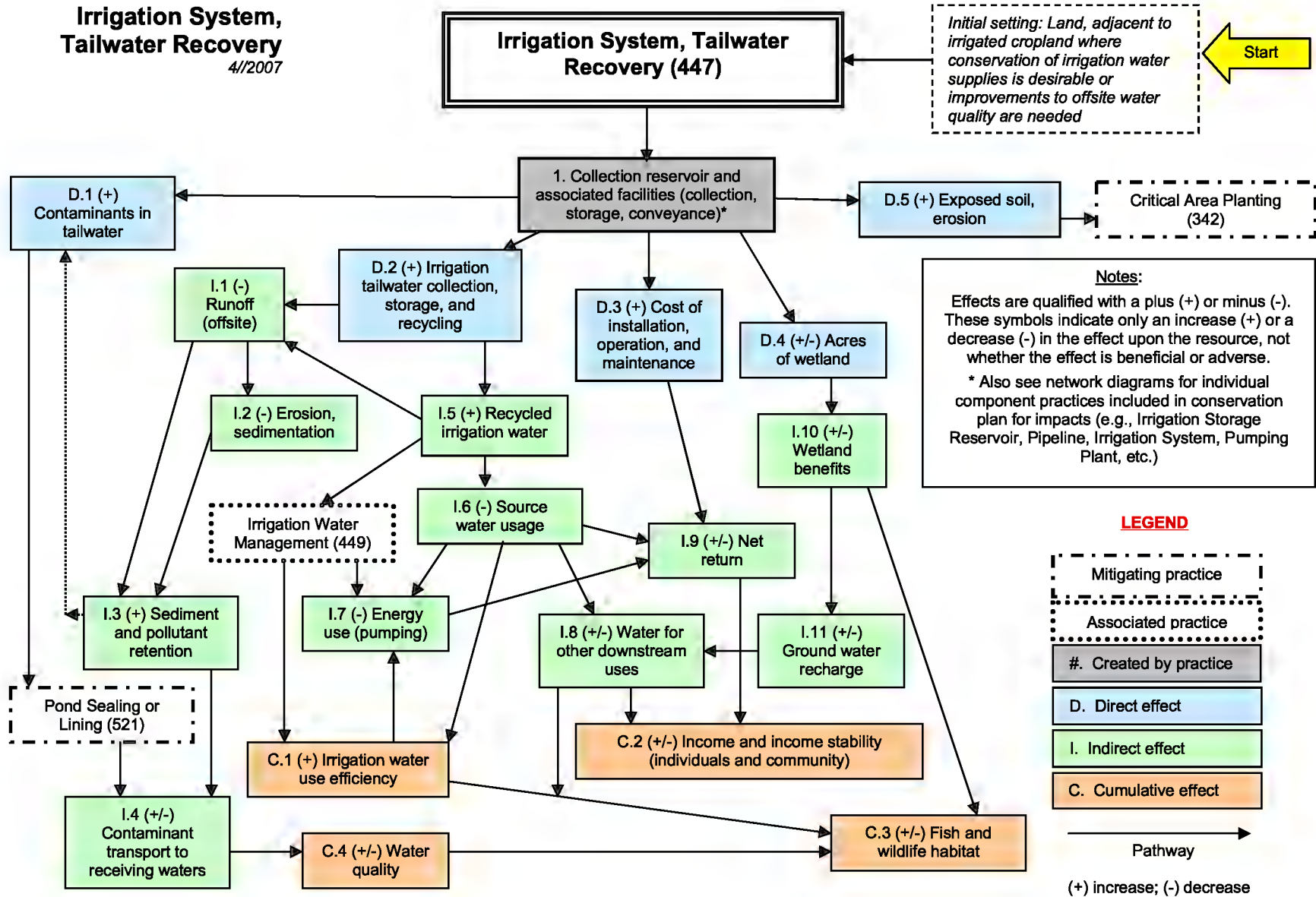
Irrigation, Tailwater Recovery is commonly used in a Conservation Management System with practices such as Pumping Plant (533), Irrigation Water Conveyance (428 series), Pond Sealing or Lining (521), and Irrigation Water Management (449).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated practice specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Irrigation System, Tailwater Recovery

4/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

IRRIGATION WATER MANAGEMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 449



IRRIGATION WATER MANAGEMENT

Irrigation and water management is determining and controlling the rate, amount, and timing of irrigation water in a planned and efficient manner.

PRACTICE INFORMATION

The purpose of this practice is to effectively use available irrigation water in managing and controlling the moisture environment of crops and other vegetation. The objectives are to promote a desired response, minimize soil erosion, minimize loss of plant nutrients, and protect both the quantity and quality of water resources.

This practice is applicable to all areas that are suitable for irrigation and have a water supply of suitable quality and quantity. In addition, a suitable irrigation system must be available and the irrigator needs to have the knowledge and capability to manage irrigation water. The following knowledge is required to properly manage irrigation water:

- How to determine when to apply water based on the rate of use by the crops at various stages of growth

- How to measure or estimate the amount of water required for each irrigation
- The time needed for the soil to absorb the required amount of water
- How to detect changes in intake rate
- How and when to adjust stream size, application rate, and irrigation time to compensate for changes in the soil or topography that effect intake rate
- How to recognize erosion caused by irrigation
- How to evaluate the uniformity of water application

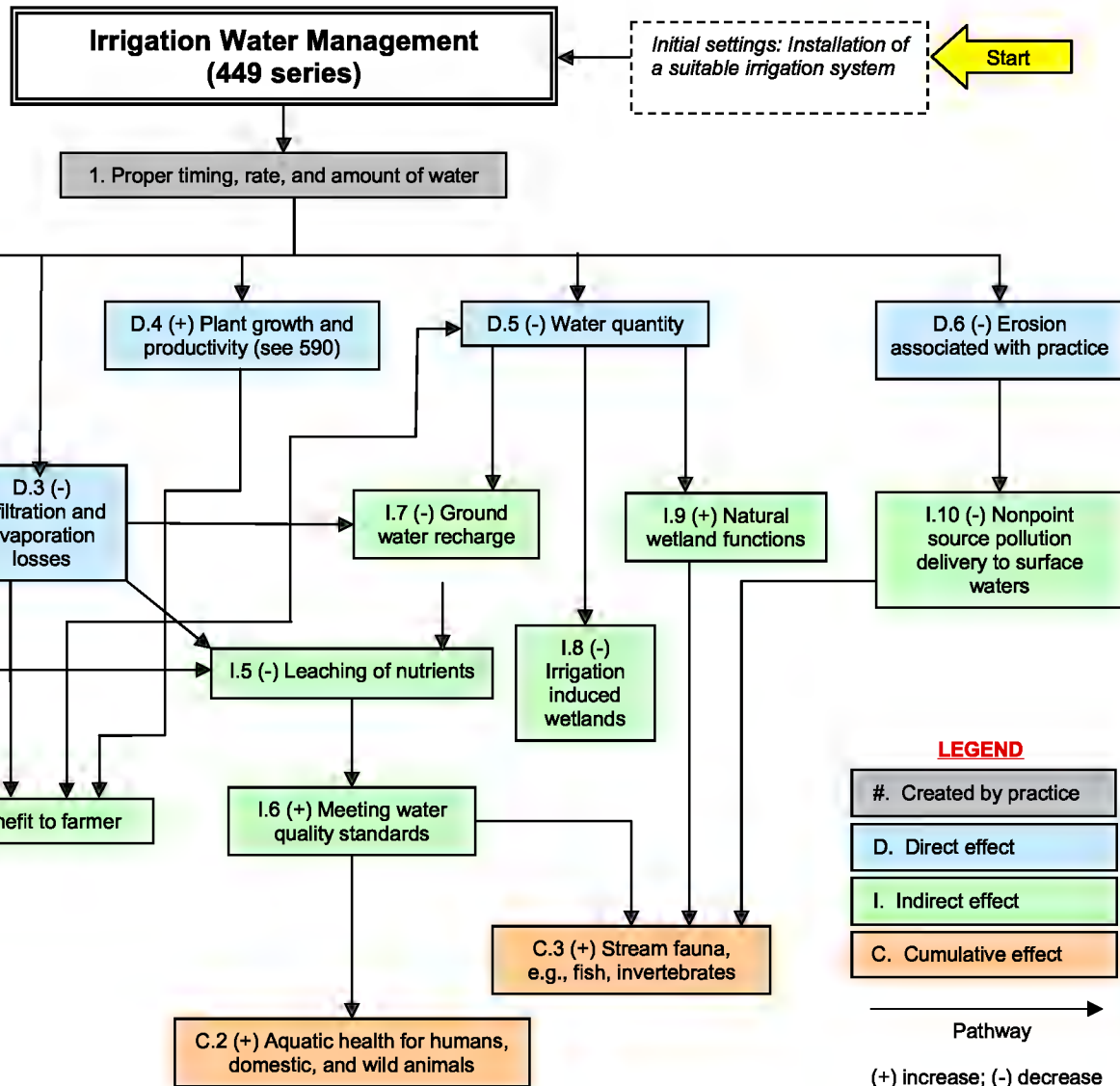
COMMON ASSOCIATED PRACTICES

Irrigation Water Management is commonly used in a Conservation Management System with practices such as Nutrient Management (590), Pest Management (595), Irrigation Water Conveyance practices, and Pumping Plant (533).

For more information, refer to the practice standard in the NRCS Field Office Technical Guide and associated specifications and design criteria.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Irrigation Water Management
5/2002



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PIPELINE

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 516



PIPELINE

The pipeline practice is used when a pipeline is needed to convey water for livestock, recreation or wildlife.

PRACTICE INFORMATION

The purpose of this practice is simply to convey water from the source of supply to the point(s) of use. The objective is usually to decentralize the location of drinking or water storage facilities. The practice is applicable where water needs to be piped to another location(s) for management purposes, to conserve the supply, or for reasons of sanitation.

Pipelines installed under this practice are generally for livestock management purposes. A single water source can provide livestock water to several locations and be very effective in improving management of a grazing unit.

Pipelines are also used on recreation and wildlife lands to provide or distribute drinking water facilities for humans as well as wildlife.

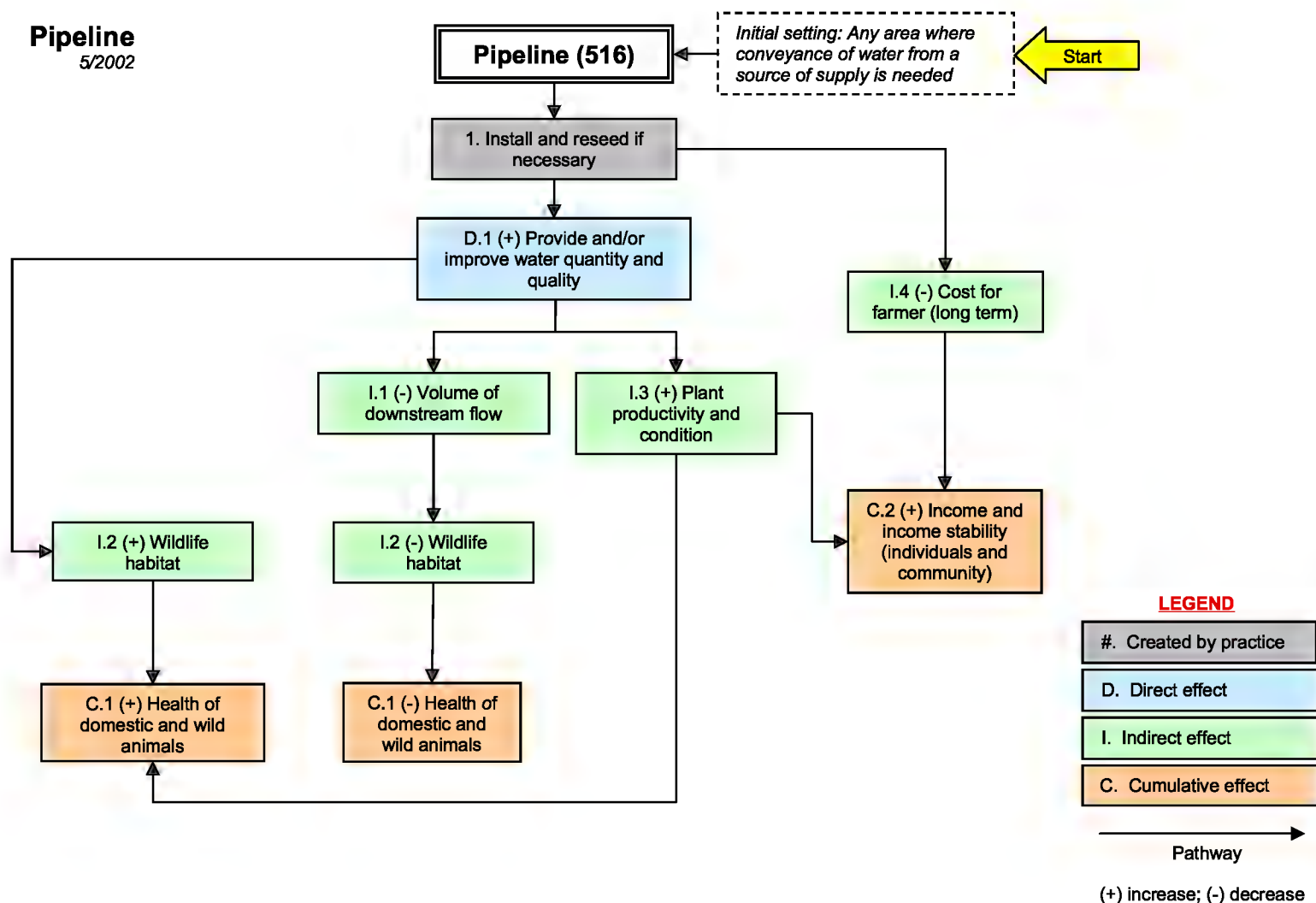
COMMON ASSOCIATED PRACTICES

Pipeline is commonly used as part of a Conservation Management System with watering practices such as Water Well (642), Spring Development (574), Pond (378), and Watering Facility (614).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Pipeline
5/2002



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POND SEALING OR LINING

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Codes 521 A, B, C, D



POND SEALING OR LINING

Pond sealing or lining is the installation of a liner for a pond or waste impoundment consisting of a compacted soil-dispersant mixture, soil-bentonite mixture, compacted clay, or a continuous synthetic flexible material.

PRACTICE INFORMATION

The purpose of this practice is to control seepage from water and waste impoundments for the purposes of water conservation and environmental protection.

This practice applies on ponds and waste storage structures that require treatment to control seepage rates within acceptable limits and to prevent the migration of contaminants offsite. Select soil materials will be used as cover for liners where required for proper performance, protection, and durability of the installation. Sub-grade materials must not contain sharp, angular stones or any objects that could damage the liner or adversely impact its function.

COMMON ASSOCIATED PRACTICES

Pond Sealing or Lining is commonly used in a Conservation Management System with the following practices:

- Irrigation Reservoir (436)
- Pond (378)
- Waste Storage Facility (313)
- Waste Treatment Lagoon (359)
- Nutrient Management (590)
- Waste Treatment (629)
- Irrigation Water Management (449)

For further information, refer to the practice standard in the local Field Office Technical Guide and associated practice specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

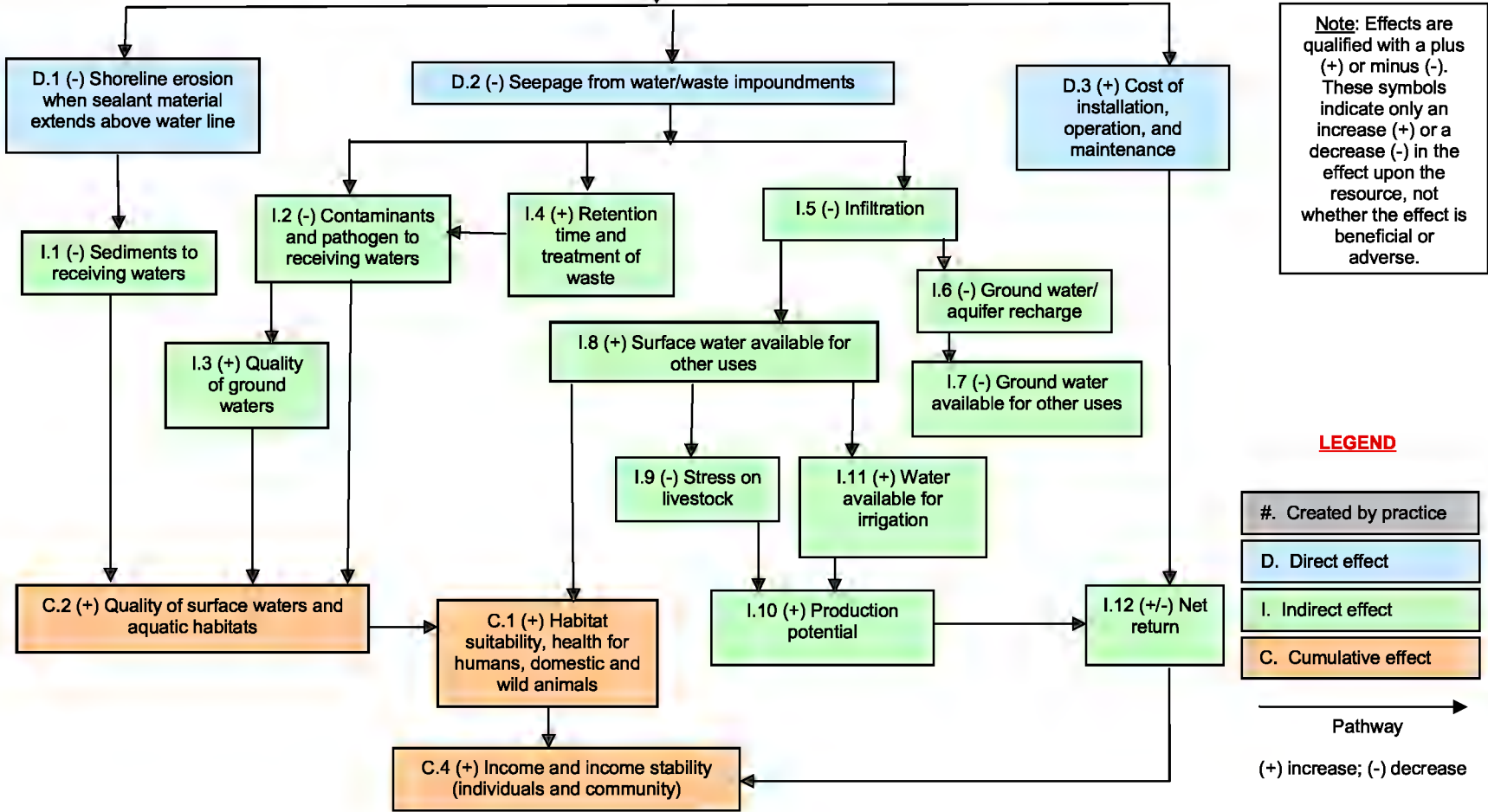
Pond Sealing or Lining
7/2008

Pond Sealing or Lining - Flexible Membrane, Soil Dispersant, Bentonite Sealant, or Compacted Clay (521A, 521B, 521C, 521D)

Initial setting: Water or waste impoundment is established and needs to be sealed to control seepage



1. Hydraulic barrier (consisting of a functionally continuous sheet of synthetic or partially synthetic, flexible material, compacted bentonite sealant, compacted clay or a soil dispersant) installed in the bottom of a pond or waste impoundment



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

LEGEND

- #. Created by practice
- D. Direct effect
- I. Indirect effect
- C. Cumulative effect

→ Pathway
(+) increase; (-) decrease

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PRESCRIBED GRAZING

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 528



PRESCRIBED GRAZING

Prescribed grazing is the controlled harvest of vegetation with grazing animals managed with the intent to achieve a specific objective.

PRACTICE INFORMATION

Prescribed grazing may be applied on all lands where grazing and/or browsing animals are managed. A prescribed grazing schedule is prepared for all fields and pastures to be grazed. Removal of herbage by the grazing animals is in conformity with realistic yield goals, plant growth needs, and management goals. Duration and intensity of grazing is based on desired plant health and expected productivity of the forage species to meet management objectives. In all cases, enough vegetation is left to prevent accelerated soil erosion.

Application of this practice manipulates the intensity, frequency, duration, distribution, and season of grazing to:

- Improve water infiltration and use
- Maintain or improve riparian and upland area vegetation

- Protect streambanks from erosion
- Manage for uniform deposition of manure away from water bodies
- Promote ecologically and economically stable plant communities which meet landowner objectives

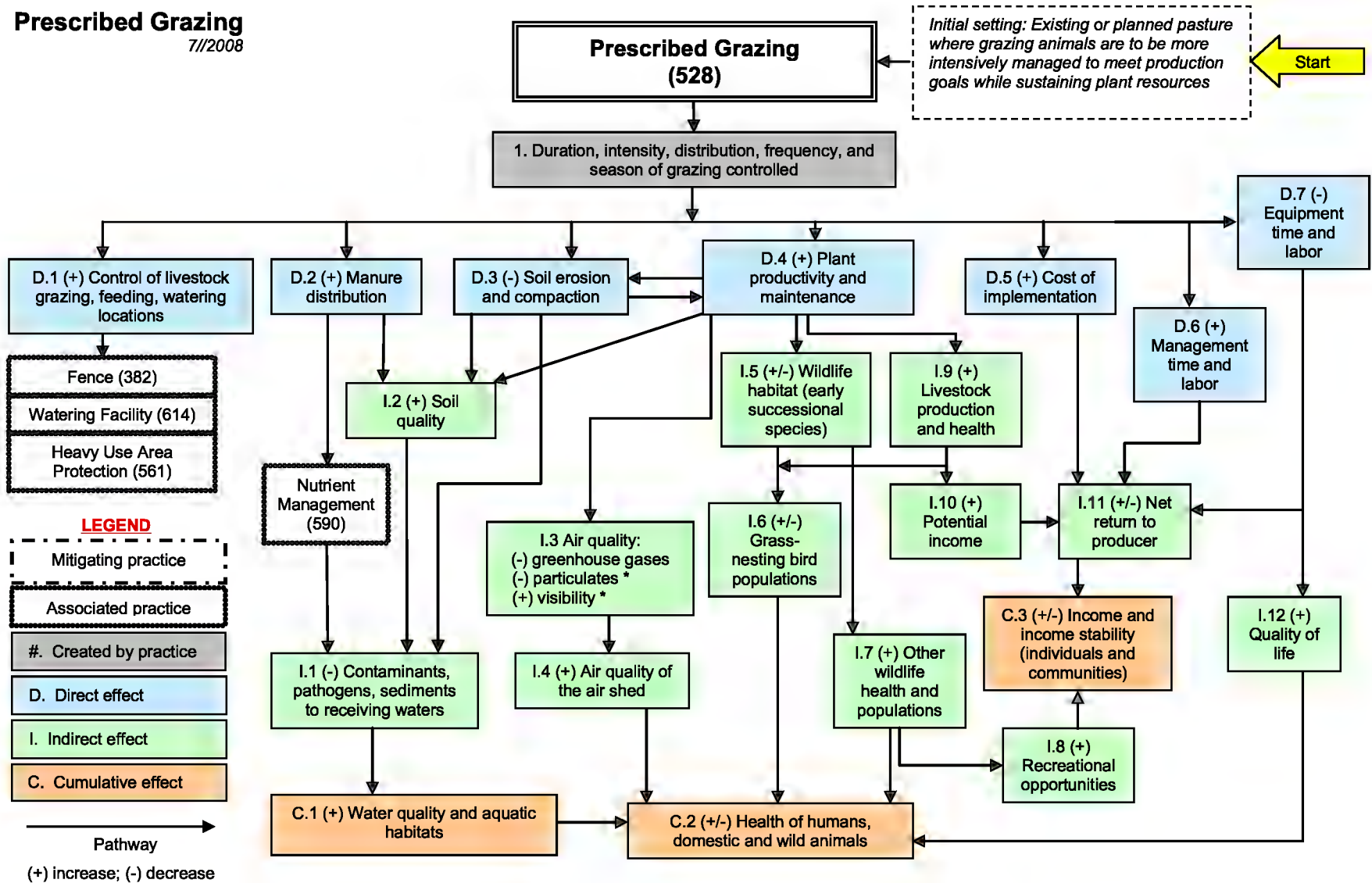
COMMON ASSOCIATED PRACTICES

Prescribed Grazing is commonly used in a Conservation Management System with the following practices: Pasture and Hay Planting (512), Feed Management (592), Fence (382), Watering Facility (614), Heavy Use Area Protection (422), Pipeline (516), Water Well (642), Pond (378), Spring Development (574), Nutrient Management (590), Pest Management (595), Use Exclusion (472), Animal Trails and Walkways (575), and Stream Crossing (589).

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

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Prescribed Grazing
7/1/2008



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PUMPING PLANT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 382



PUMPING PLANT

A Pumping plant is a facility installed to transfer water for a conservation need.

PRACTICE INFORMATION

Pumping plants provide a dependable water source or disposal facility for water management. This practice applies wherever water must be pumped to accomplish a conservation objective, which may include but is not limited to:

- Water supply for irrigation, recreation, livestock, or wildlife
- Maintenance of critical water levels in swamps, marshes, open water, or for newly constructed wetlands and ponds
- Transfer of wastewater for utilization as part of a waste management system
- Facilitation of drainage by the removal of surface runoff or ground water

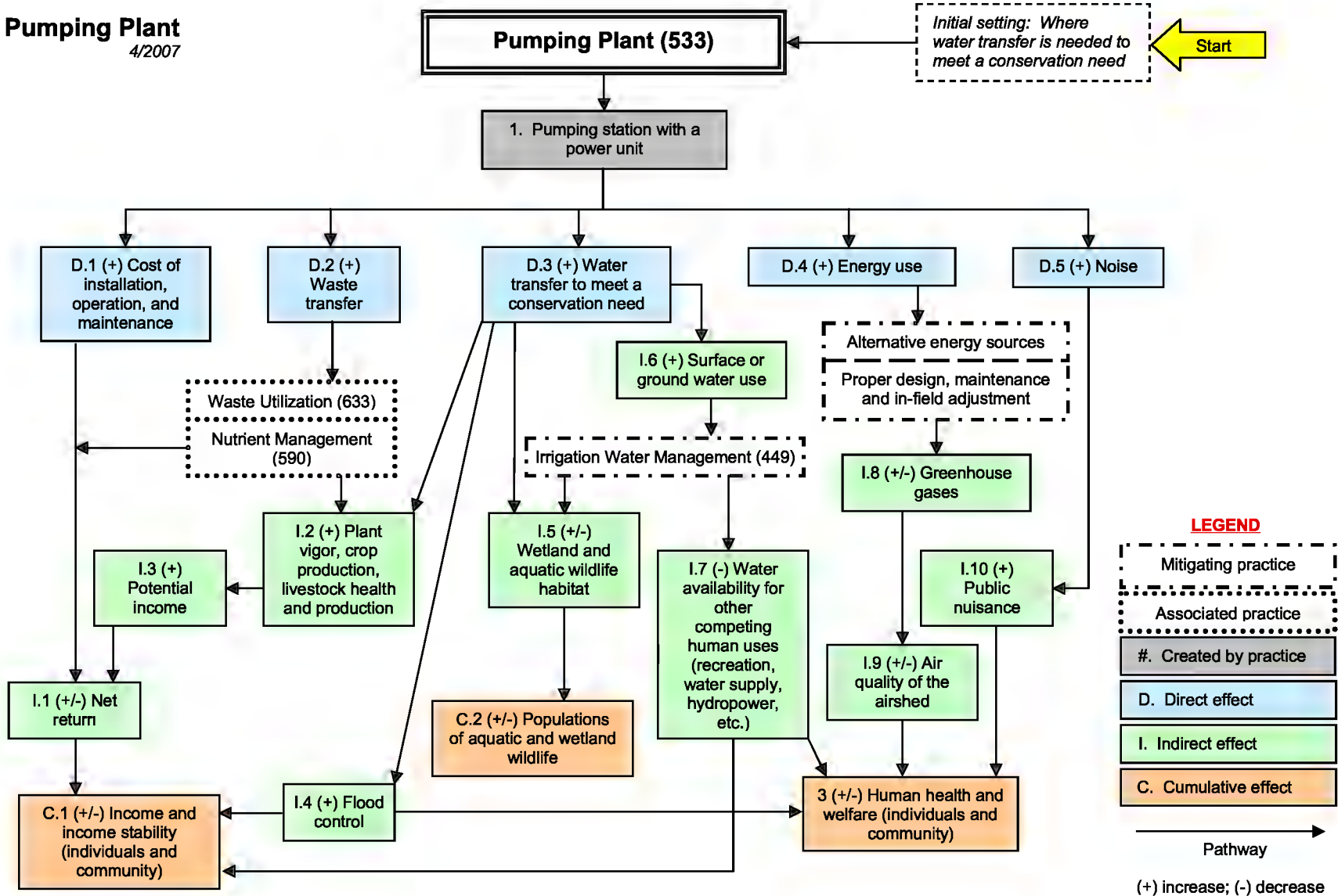
COMMON ASSOCIATED PRACTICES

Pumping Plant is commonly used in a Conservation Management System with Irrigation Water Conveyance (428), Irrigation System (441, 442, 443, 447), Pipeline (516), Watering Facility (614), Waste Transfer (634).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Pumping Plant
4/2007



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

RANGE PLANTING

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 550



RANGE PLANTING

Range planting is establishment of adapted perennial vegetation.

PRACTICE INFORMATION

This practice applies to rangeland, native or naturalized pasture, grazed forest, or other suitable land areas where the principle method of vegetation management is grazing.

Vegetation types might be grasses, legumes, shrubs, forbs, shrubs, and trees.

The practice applies where desirable vegetation is below the acceptable level for natural reseeding to occur or where the potential for enhancement of the vegetation by grazing management is unsatisfactory.

Species, cultivars, or varieties selected must be compatible with management objectives and adapted to climatic conditions, soil, landscape position, and range site. In addition, the selected species for planting must provide adequate cover for erosion control. Plants selected for establishment should also contribute to wildlife and aesthetics when opportunities exist and are in line with planning objectives.

Plant establishment requires the following:

- Proper seedbed preparation
- Observation of recommended planting dates
- Planting at the recommended rate or spacing
- Using quality seed and plant material
- Apply recommended soil amendments and fertilizer
- Control weeds and grazing during establishment period

COMMON ASSOCIATED PRACTICES

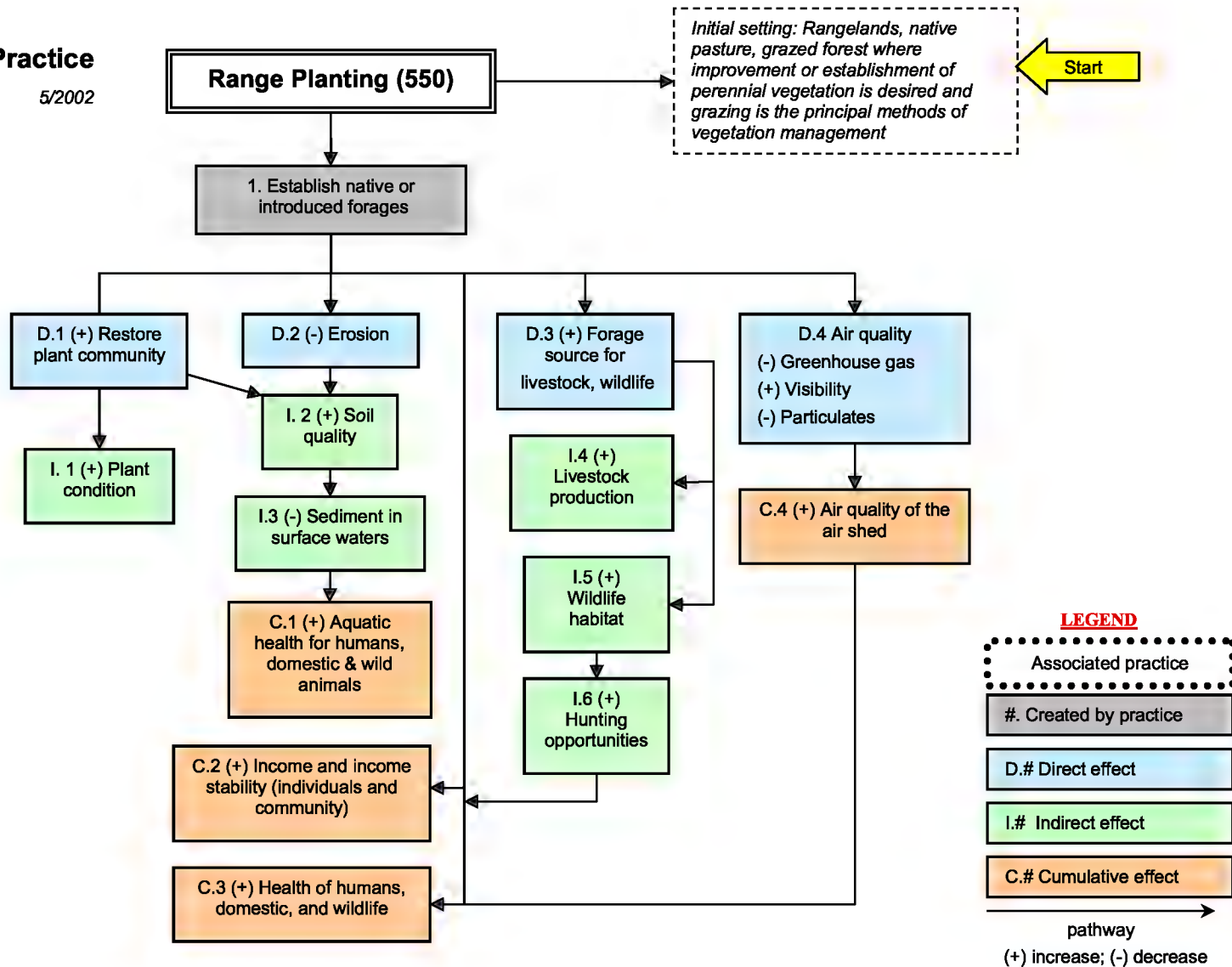
Other conservation practices such as Brush Management (314), Grazing Land Mechanical Treatment (548), Prescribed Burning (338), and livestock watering systems may be needed as part of a Conservation Management System to promote establishment and management of a successful range planting.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Range Planting Practice

5/2002



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

HEAVY USE AREA PROTECTION

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 561



HEAVY USE AREA PROTECTION

Heavy use area protection is the establishment of a stable surface with suitable materials and any needed structures to protect areas heavily impacted by livestock, vehicles or development.

PRACTICE INFORMATION

This practice is usually applied on agricultural land or developed land used intensively by livestock, vehicles, and people. Treatment provided by this practice is primarily for erosion control, but also addresses other types of natural resource degradation including aesthetics.

The prescribed surface treatment is designed to accommodate the specific type of traffic expected to occur. Surface treatment may involve pavement for vehicle traffic, or vegetation may provide sufficient protection for people and animal traffic.

Impermeable surfaces such as pavement increase runoff. Therefore, provision for drainage is always considered when planning this practice.

COMMON ASSOCIATED PRACTICES

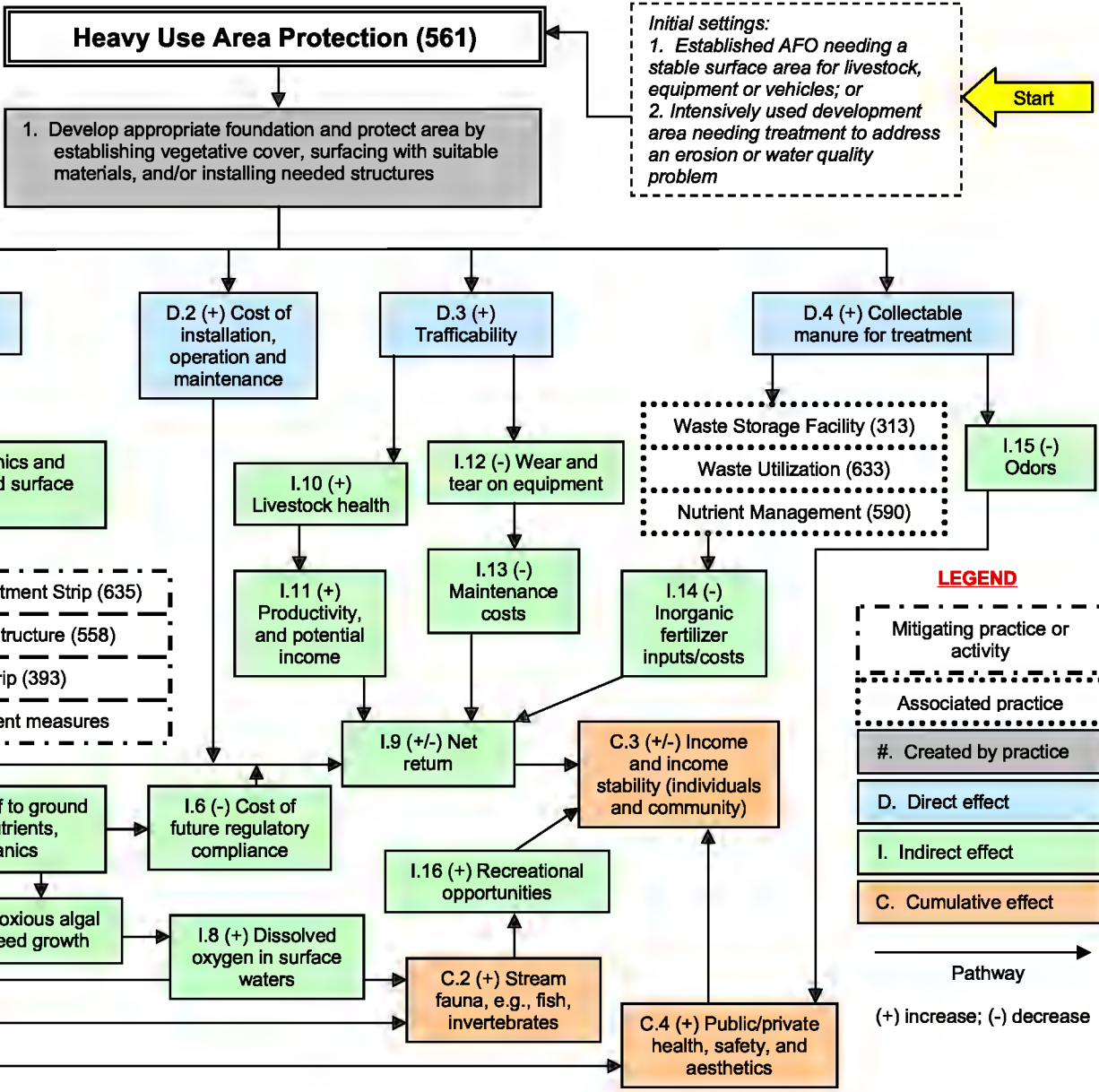
Heavy Use Area Protection is commonly used in a Conservation Management System with practices such as Prescribed Grazing (528), Vegetated Treatment Area (635), Nutrient Management (590), Waste Storage Facility (313), Roof Runoff Structure (558), Filter Strip (393), and practices for erosion and sediment control.

For further information, refer to the practice standard in the local Field Office Technical Guide and associated job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Heavy Use Area Protection

4/2007



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

SPRING DEVELOPMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 574



SPRING DEVELOPMENT

Spring development is improving springs and/or seeps by excavating, cleaning, capping, or providing collection and storage facilities.

PRACTICE INFORMATION

The purpose of spring development is to improve distribution of water for livestock, recreation, and wildlife. The practice also applies to irrigation when the quantity and quality of water are suitable for irrigating crops. Spring development involves cleaning and/or enlarging the discharge opening of the spring. Other appurtenances might be needed such as a collection device to channel the water and a spring box to provide a small amount of storage, as well as a sediment trap and connection point for an outlet pipe(s). The outlet pipe(s) may then lead to a storage facility such as a trough or tank.

Prior to spring development, an investigation of site conditions must be completed including ecological functions and potential losses to these functions that may occur. Consideration should be given to how diversion of water from the spring may affect streamflow in the watershed and whether the spring can be developed to preserve conditions that support unique habitats in the landscape.

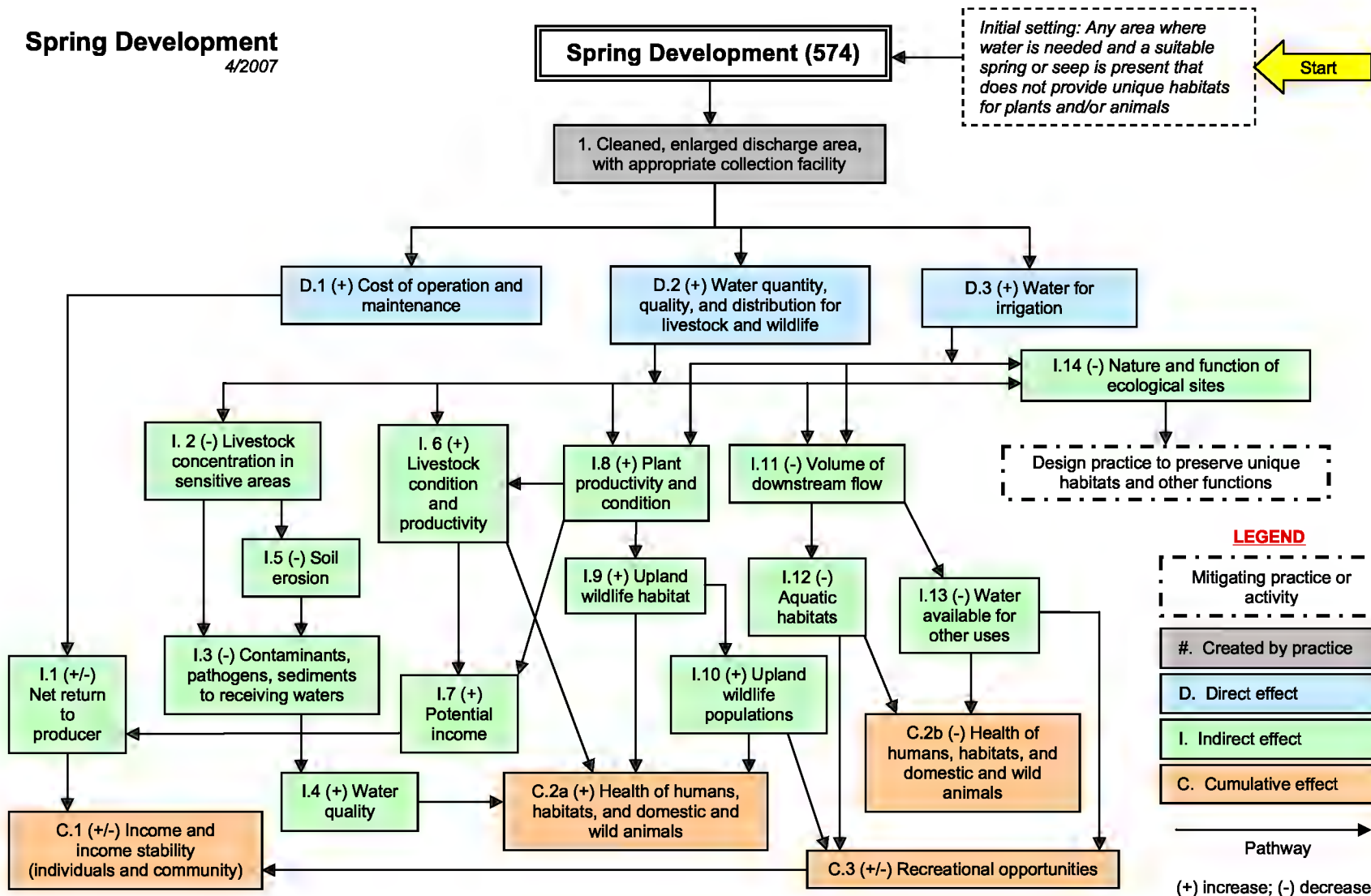
COMMON ASSOCIATED PRACTICES

Spring Development is commonly used in a Conservation Management System with practices such as Watering Facility (614), Pipeline (516), Irrigation Water Management (449), and Critical Area Planting (342).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Spring Development
4/2007



Notes:
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse. **The scope of the practice implementation and resulting effects are limited to those described in the "initial setting."** If unique habitats supporting plant and animal species exist in a spring to be developed, particularly where there have been numerous disruptions of similar habitats across the landscape, impacts upon the habitat and options for development to preserve unique ecological functions may need to be evaluated in a site-specific EA. Various regulations and policies for the protection of wetlands should also be considered.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

STREAMBANK AND SHORELINE PROTECTION

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 580



STREAMBANK AND SHORELINE PROTECTION

Streambank and shoreline protection is the stabilization and protection of streambanks, constructed channels, and shorelines of lakes, reservoirs, or estuaries.

PRACTICE INFORMATION

This practice applies to streambanks of natural or constructed channels and shorelines of lakes, reservoirs, or estuaries where they are susceptible to erosion.

The purpose(s) of this practice include:

- Preventing the loss of land or damage to land uses or other facilities adjacent to the banks
- Protecting historical, archeological, and traditional cultural properties, while accommodating the natural fluvial processes within the stream segment and shoreline reach
- Maintaining the flow or storage capacity of the water body
- Reducing the offsite or downstream effects of sediment resulting from bank erosion

- Improving or enhancing the stream corridor for fish and wildlife habitat, aesthetics, and recreation

Various materials may be used for protection of streambanks and shorelines. An extensive site assessment must be conducted to determine, among other factors, if the causes of instability are local or systemic in nature. This information is used in selecting the most appropriate treatment to achieve the desired objectives. Treatments must be functional and stable for the design flow and sustainable for higher flow conditions.

COMMON ASSOCIATED PRACTICES

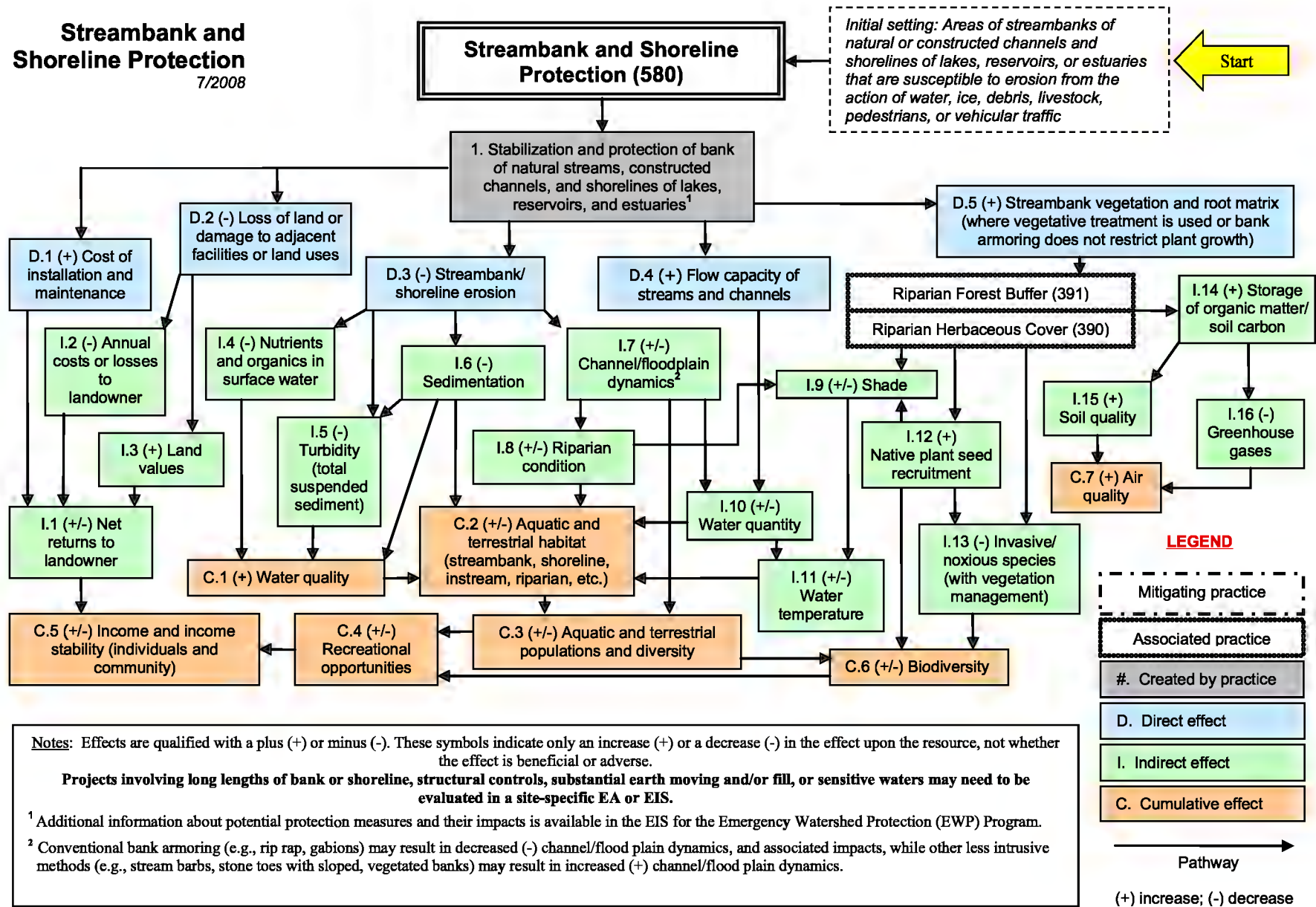
Streambank and Shoreline Protection is commonly used in a Conservation Management System with various conservation practices including Riparian Forest Buffer (391), Riparian Herbaceous Buffer (390), Critical Area Planting (342), Fish Passage (396), Pipeline (516), Fence (382), Use Exclusion (472), and Watering Facility (614).

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Streambank and Shoreline Protection

7/2008



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STRUCTURE FOR WATER CONTROL

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 587



STRUCTURE FOR WATER CONTROL

A structure for water control is placed in irrigation, drainage, or other water management systems to convey water, control the direction or rate of flow, or maintain water surface elevation.

PRACTICE INFORMATION

Structures for water control are used to control the stage, discharge, distribution, delivery, or direction of flow of water in open channels or water use areas. They are also used for water quality control, such as sediment reduction or temperature regulation, or for protection of fish and wildlife and other natural resources.

Water control structures are used as outlets on cranberry bogs and irrigation pits to manage the level of water for harvesting, winter flooding, trash removal, pest control or other purposes. When used to control the division of chemigation water, this practice will reduce the amount of suspended chemicals attached to organic material and soil

particles entering surface waters. It allows for the biological treatment of dissolved chemicals when water is detained in the system for the required holding period. Chemicals that remain in the system may be bound up in the soil organic matter; however, soils that are low in organic matter may have a tendency to allow for the leaching of dissolved chemicals into the ground water.

COMMON ASSOCIATED PRACTICES

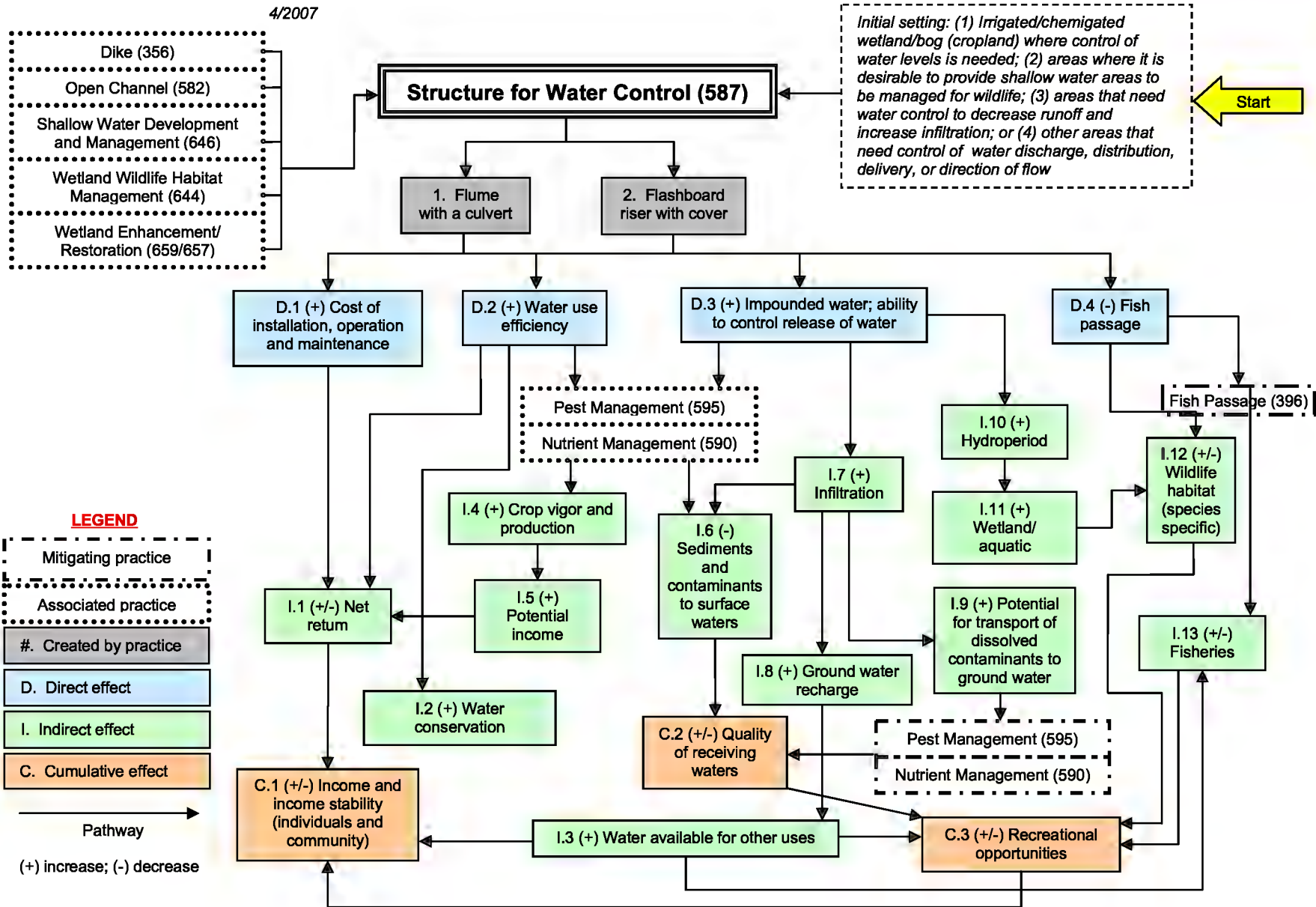
Structure for Water Control is commonly used in Conservation Management Systems with Dike (356), Open Channel (582), Land Smoothing (466), Shallow Water Development and Management (646), Wetland Wildlife Habitat Management (644), Wetland Enhancement (659), or Wetland Restoration (657).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Structure for Water Control

4/2007



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SALINITY AND SPODIC SOIL MANAGEMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 610



SALINITY AND SPODIC SOIL MANAGEMENT

Land, water, and plants are managed to control and minimize accumulations of salts and/or sodium on the soil surface and in the crop rooting zone.

PRACTICE INFORMATION

This practice applies to all land uses where the concentration or toxicity of salt limits the growth of desirable plants or where excess sodium causes crusting and permeability problems. This practice also applies to nonirrigated land where a combination of factors such as topography, soils, geology, precipitation, vegetation, land use, and cultural/structural practices can increase the extent and concentration of salts in saline seep areas.

COMMON ASSOCIATED PRACTICES

Salinity and Spodic Soil Management is commonly used in a Conservation Management System with practices such as:

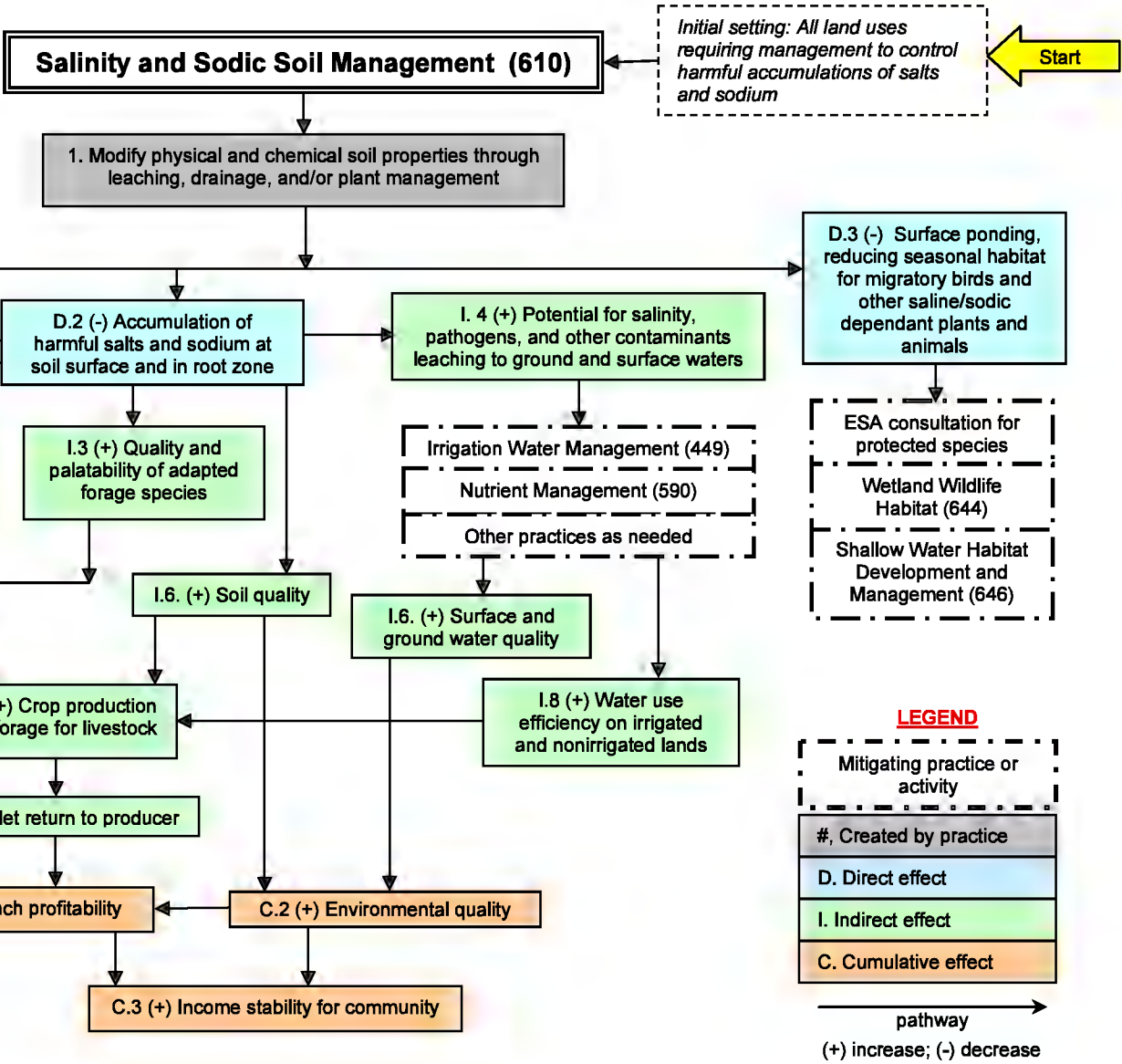
- Anionic Polyacrylamide (PAM) Erosion Control (450)
- Conservation Cover (327)
- Conservation Crop Rotation (328)
- Cover Crop (340)
- Deep Tillage (324)
- Irrigation Water Management (449)
- Monitoring Well (353)
- Nutrient Management (590)
- Pest Management (595)
- Pasture and Hay Planting (512)
- Residue Management (344)
- Subsurface Drain (606)
- Surface Drainage (606, 607)
- Drainage Water Management (554)

For more information, refer to the practice standard in the NRCS Field Office Technical Guide and associated specifications and job sheets.

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Salinity and Sodic Soil Management

7/2008



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TREE/SHRUB ESTABLISHMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 612



TREE/SHRUB ESTABLISHMENT

Tree and shrub establishment is establishing woody plants by planting seedlings, cuttings, direct seeding or natural regeneration.

PRACTICE INFORMATION

The purposes of the practice include:

- Forest products
- Beautification
- Erosion control
- Energy conservation
- Chemical/nutrient sink for water quality improvement
- Wildlife habitat improvement
- Air quality improvement
- Wetland improvement

This practice is applicable on any site where woody plants are suited. Site adaptation is a

major consideration for success in establishing trees and shrubs. Careful consideration should also be given to the suitability of the selected species for the planned purpose and available space for growth.

COMMON ASSOCIATED PRACTICES

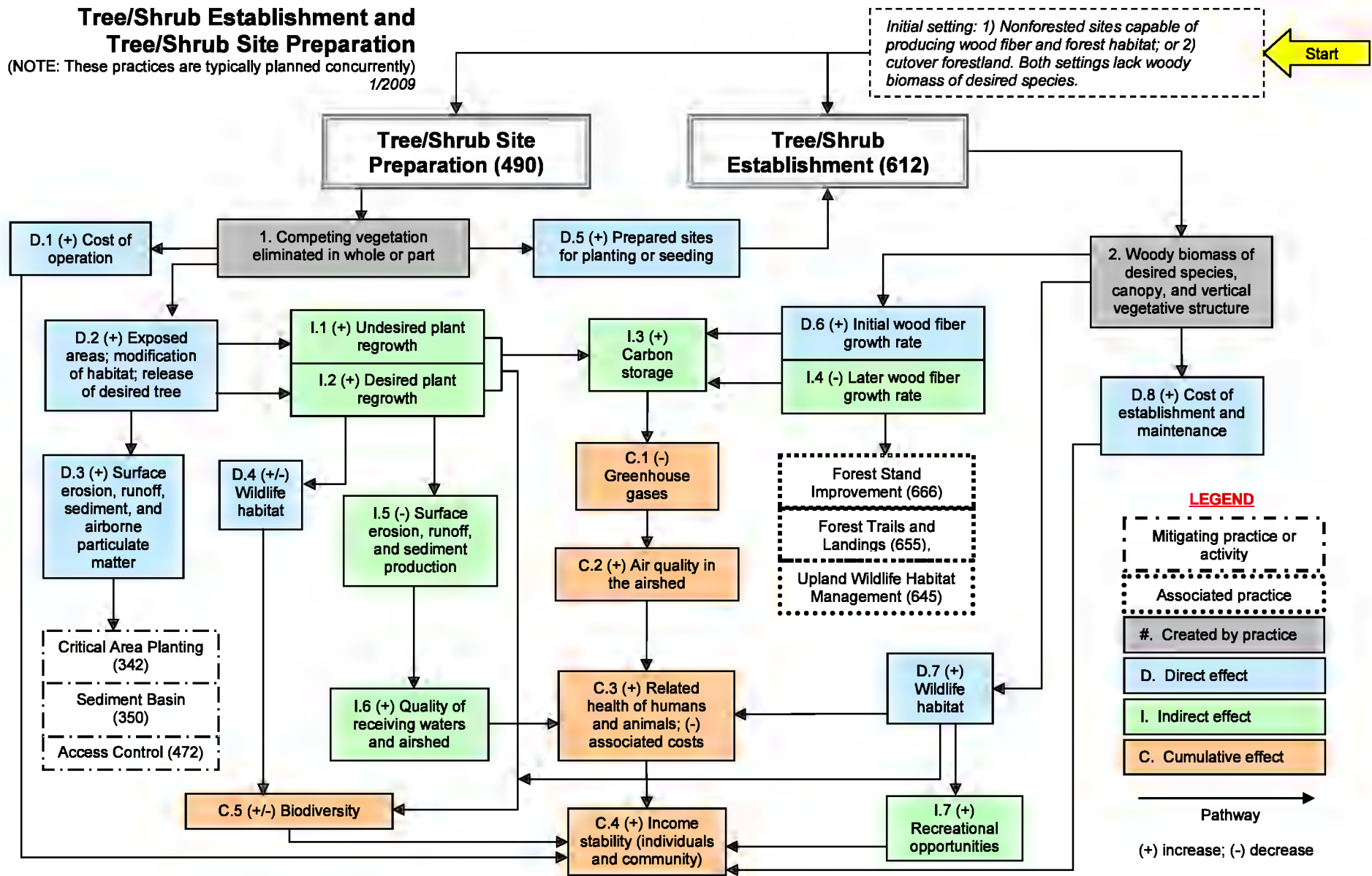
Tree/Shrub Establishment is commonly applied as part of a Conservation Management System and most always with Tree/Shrub Site Preparation (490) preceding it. Other associated practices may include Forest Stand Improvement (666), Forest Trails and Landings (655), Upland Wildlife Habitat (645), Critical Area Planting (342), Sediment Basin (350), Pest Management (595) and Use Exclusion (472).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

The following page identifies the conservation effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, and soil. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Tree/Shrub Establishment and Tree/Shrub Site Preparation

(NOTE: These practices are typically planned concurrently)
1/2009



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WATERING FACILITY

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 614



WATERING FACILITY

A watering facility is a trough or tank installed as a livestock watering facility.

PRACTICE INFORMATION

A watering trough or tank provides livestock with drinking water at planned locations that will protect vegetative cover through proper distribution of grazing or other management techniques. The water source(s) may be a well, spring, stream, pond, or other sources including water hauling, in some situations.

In addition to providing livestock water, troughs are sometimes installed to keep cattle out of streams and other surface water areas where water quality is a concern.

COMMON ASSOCIATED PRACTICES

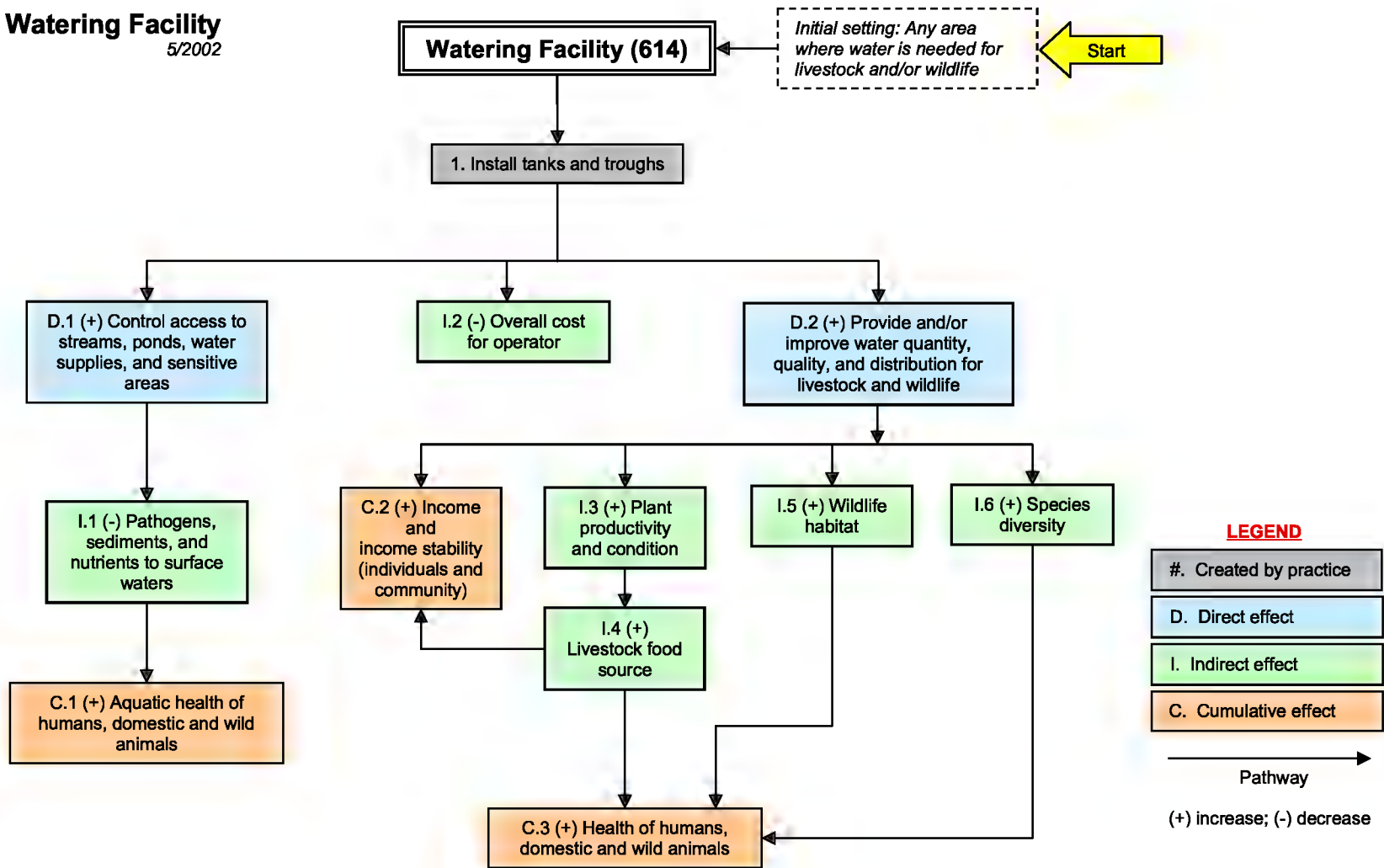
Watering Facility is commonly used as part of a Conservation Management System with practices such as Water Well (642), Pipeline (516), Spring Development (574), and Prescribed Grazing (528).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated specifications and job sheets.

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Watering Facility

5/2002



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WATER WELL

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 642



WATER WELL

A water well is a hole drilled, dug, driven, bored, jetted, or otherwise constructed to an aquifer to provide water for livestock, wildlife, irrigation, human, and other uses.

PRACTICE INFORMATION

This practice applies on all sites where the underground supply of water is sufficient in quantity and quality for the intended purpose. Monitoring or observation wells or wells installed for injection purposes are not included.

This practice requires proper design and installation to function properly. If practicable, wells should be located in higher ground and up gradient from sources of contamination or flooding. The potential for adverse interference with existing nearby production wells should be evaluated in planning. Other concerns that should be considered in planning include the potential for ground water overdraft; the long-term safe yield of the aquifer and potential effects of installation; and operation of the well on cultural, historical, archeological, or scientific resources at or near the site.

COMMON ASSOCIATED PRACTICES

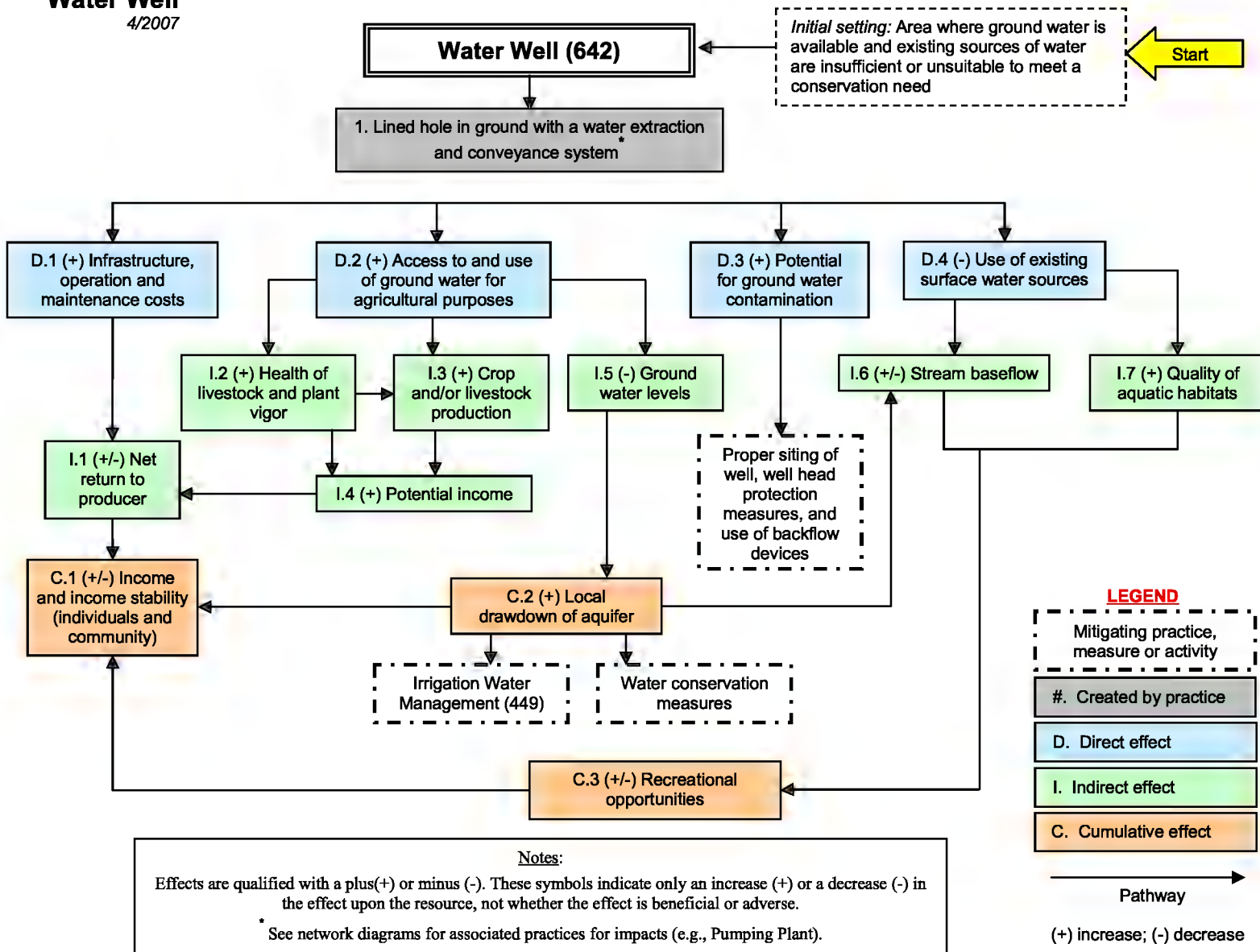
Once a well has been installed, a distribution system, watering system, and/or irrigation system are usually needed.

Water Well is commonly used in Conservation Management Systems with practices such as Pumping Plant (533), Pipeline (516), Watering Facility (614), and the Irrigation System practices.

For further information, refer to the practice standard in the local Field Office Technical Guide and associated job sheets.

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Water Well
4/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

RESTORATION AND MANAGEMENT OF RARE OR DECLINING HABITATS

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 643



RESTORATION AND MANAGEMENT OF RARE OR DECLINING HABITATS

Restoration and management of rare or declining habitats is the re-creation and conservation of rare or declining native vegetated communities and their associated wildlife species.

PRACTICE INFORMATION

This practice applies to any landscape which once supported or currently supports the habitat to be restored or managed.

The purposes of this practice are to:

- Restore land or aquatic habitats degraded by human activity
- Provide habitat for rare and declining wildlife species by restoring and conserving native plant communities
- Increase native plant community diversity
- Manage unique or declining native habitats

(Note: NRCS uses the term “wildlife” to include all animals, terrestrial and aquatic.)

COMMON ASSOCIATED PRACTICES

Restoration and Management of Rare or Declining Habitats is commonly used in a Conservation Management System with the following practices:

- Animal Trails and Walkways (575)
- Brush Management (314)
- Conservation Cover (327)
- Early Successional Habitat Development/Management (647)
- Tree/Shrub Establishment (612)
- Prescribed Burning (338)
- Upland Wildlife Habitat Management (645)
- Wetland Wildlife Habitat Management (644)

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

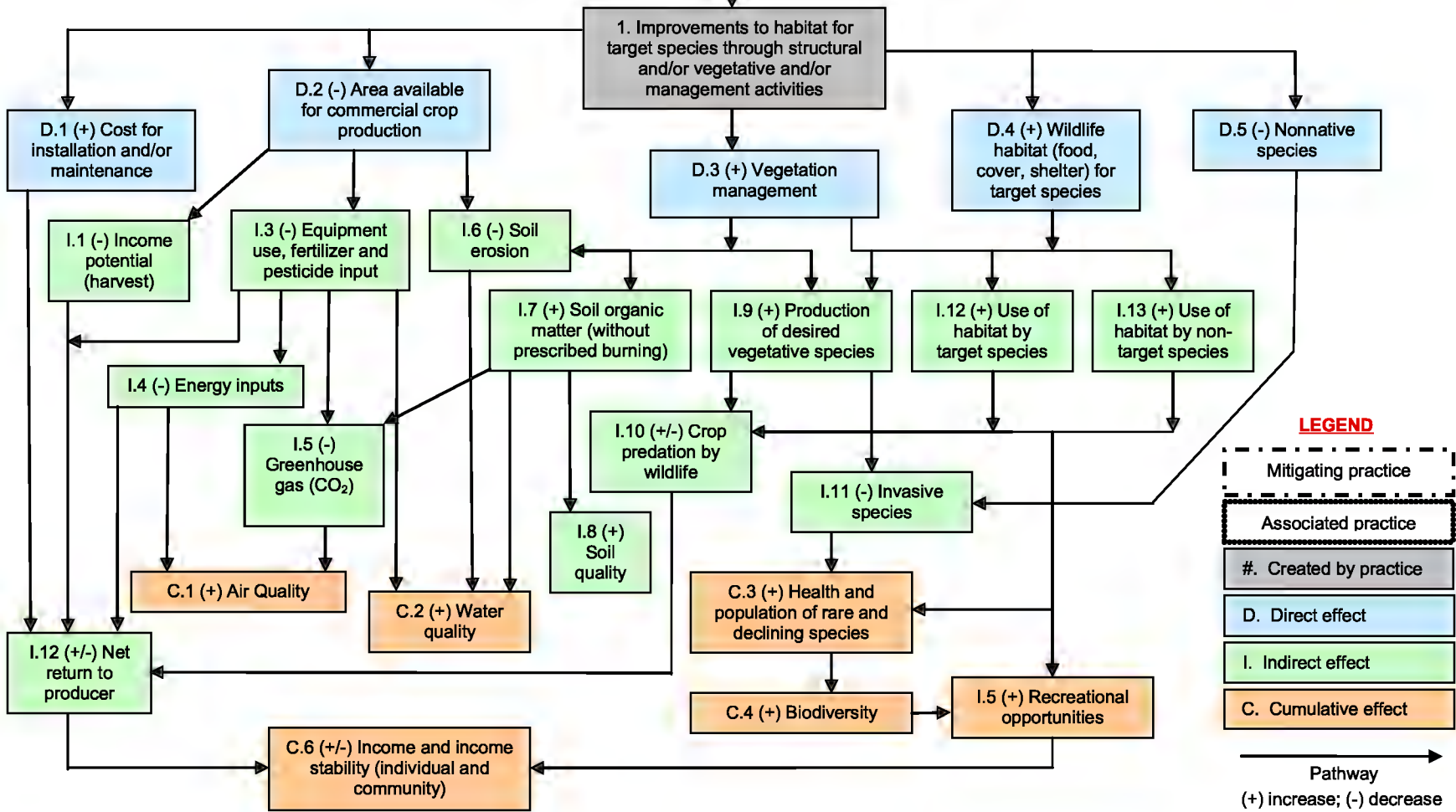
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Restoration and Management of Rare or Declining Habitats

7/2008

Restoration and Management of Rare or Declining Habitats (643)

Initial setting: Any site which once supported or currently supports the habitat which the decisionmaker wants to restore or manage



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WETLAND WILDLIFE HABITAT MANAGEMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 644



WETLAND WILDLIFE HABITAT MANAGEMENT

Wetland wildlife habitat management is retaining, creating, or managing wetland habitat for wildlife.

PRACTICE INFORMATION

This practice is used to create or improve habitat for waterfowl, furbearers, or other wildlife. It applies on wetland and other areas where water can be impounded or regulated by diking, ditching, or flooding.

The practice is planned for specific species of wildlife. Specifications for the practice include items such as:

- Practice components, including structures, necessary to meet the requirements of the desired species of wildlife
- The required seasonal water depths necessary to provide adequate habitat during different seasons of the year

- Adapted plant species required for reproduction, food, and cover by target species of wildlife
- Management of vegetation to assure sustainability

COMMON ASSOCIATED PRACTICES

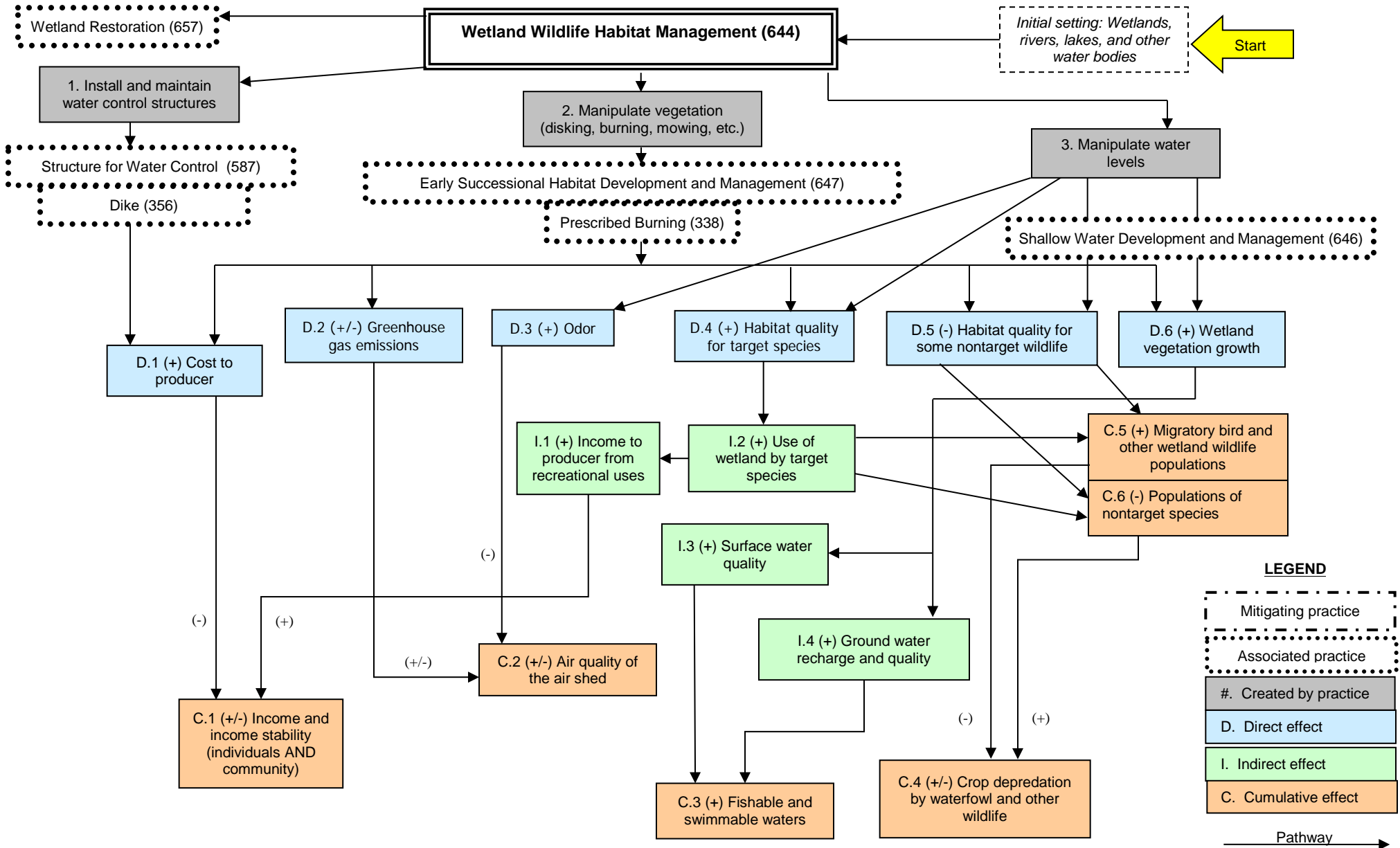
Wetland Wildlife Habitat Management is commonly used in a Conservation Management System with other wetland and wildlife practices such as Wetland Restoration (657), Wetland Enhancement (659), Restoration and Management of Rare and Declining Habitats (643), Shallow Water Development and Management (646), Upland Wildlife Habitat Management (645), Prescribed Burning (338), and Riparian Forest Buffer (391).

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

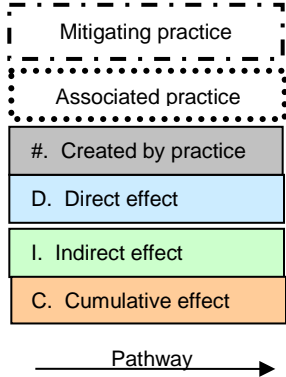
The following page identifies the conservation effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

NRCS CONSERVATION PRACTICE EFFECTS - NETWORK DIAGRAM

March 2014



LEGEND



Note:
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UPLAND WILDLIFE HABITAT MANAGEMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 645



UPLAND WILDLIFE HABITAT MANAGEMENT

Upland wildlife habitat management is creating, maintaining, or enhancing areas to provide food, cover, and habitat connectivity for upland wildlife.

PRACTICE INFORMATION

The population dynamics of wildlife are highly dependent on food, water, and cover. The purpose of this practice is to treat habitat concerns identified during the NRCS conservation planning process to enable movement or provide shelter, cover, and food to sustain wild animals that inhabit uplands during a portion of their life cycle. The practice applies to all areas where a need to improve upland wildlife habitat has been identified.

Upland wildlife habitat management usually involves the establishment or manipulation of vegetative communities. Common activities include planting permanent or seasonal vegetation, disking strips within existing vegetation, mowing, burning, and herbicide treatments.

COMMON ASSOCIATED PRACTICES

Upland Wildlife Habitat Management is commonly used in Conservation Management Systems with one or more of the following component practices:

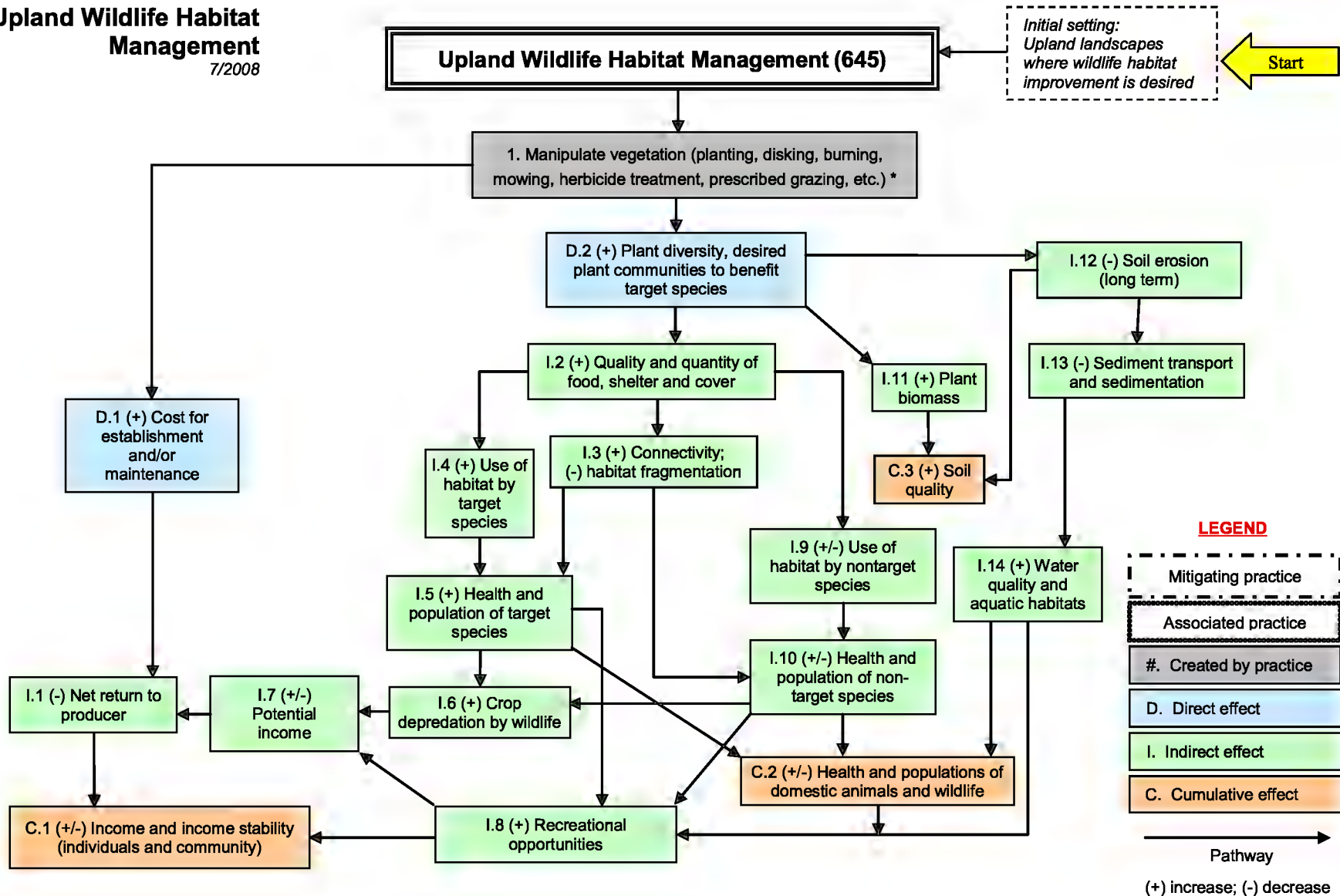
- Prescribed Burning (338)
- Prescribed Grazing (528)
- Brush Management (314)
- Tree/Shrub Establishment (612)
- Forest Stand Improvement (666)
- Early Successional Habitat Development and Management (647)
- Use Exclusion (472)
- Field Border (386)
- Watering Facility (614)

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Upland Wildlife Habitat Management

7/2008



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse..
 * Management activities are species, guild, suite or ecosystem specific; see network diagrams for individual component practices for impacts (e.g., Prescribed Burning)

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

CONSTRUCTED WETLAND

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 656



CONSTRUCTED WETLAND

A constructed wetland is an artificial ecosystem consisting of a shallow basin established with hydrophytic vegetation that is constructed to intersect and treat the flow of a waste stream or contaminated runoff.

PRACTICE INFORMATION

Constructed wetlands are used to treat wastewater and contaminated runoff from agricultural processing, livestock, and aquaculture facilities or for improving the quality of storm water or other water flows lacking specific water quality discharge criteria.

For the constructed wetland to work properly, inlet control is provided to prevent debris from entering the wetland, and outlet control is provided to maintain appropriate water depths for wetland vegetation and the design hydraulic retention time.

The constructing wetland is a discharging practice, and therefore, the discharge must either be captured elsewhere in the wastewater treatment system or discharged to the ecosystem in a manner consistent with discharge permit requirements.

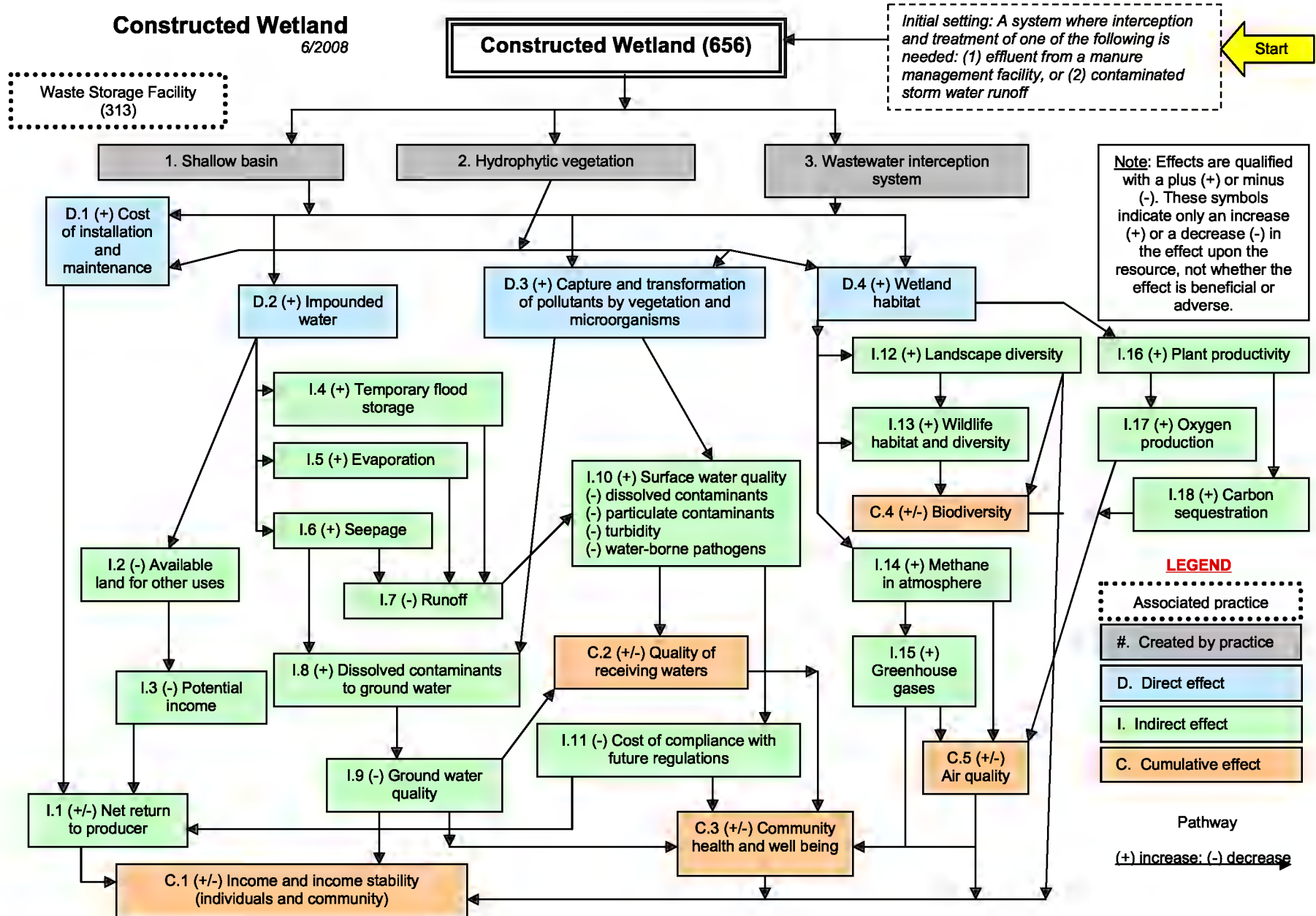
Wetland plants are established that are suitable for local climatic conditions and tolerant of the contaminated flow the wetland is designed to attenuate. Invasive or nonnative species that could become a problem in the native habitat are not used.

COMMON ASSOCIATED PRACTICES

A constructed wetland is commonly planned as part of a Conservation Management System with Waste Storage Facility (313), Waste Utilization (633), Critical Area Planting (342), Nutrient Management (590), Solid/Liquid Separation Facility (632), and other conservation practices.

For further information, refer to the practice standard in the local Field Office Technical Guide and associated job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

WETLAND RESTORATION

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 657



WETLAND RESTORATION

Wetland restoration is construction or restoration of wetlands to provide the hydrological and biological benefits of a wetland site.

PRACTICE INFORMATION

This practice applies only to areas that were once wetland but were drained to accommodate another land use. Hydric soils must be present, and it must be possible to approximate the natural hydrologic conditions. In most cases, dikes or other water control structures are used to create or improve water storage on the site.

The purpose of this practice is to establish or reestablish wetlands for the benefit of wildlife, to reduce flooding, provide offsite water quality benefits, and increase ground water recharge.

COMMON ASSOCIATED PRACTICES

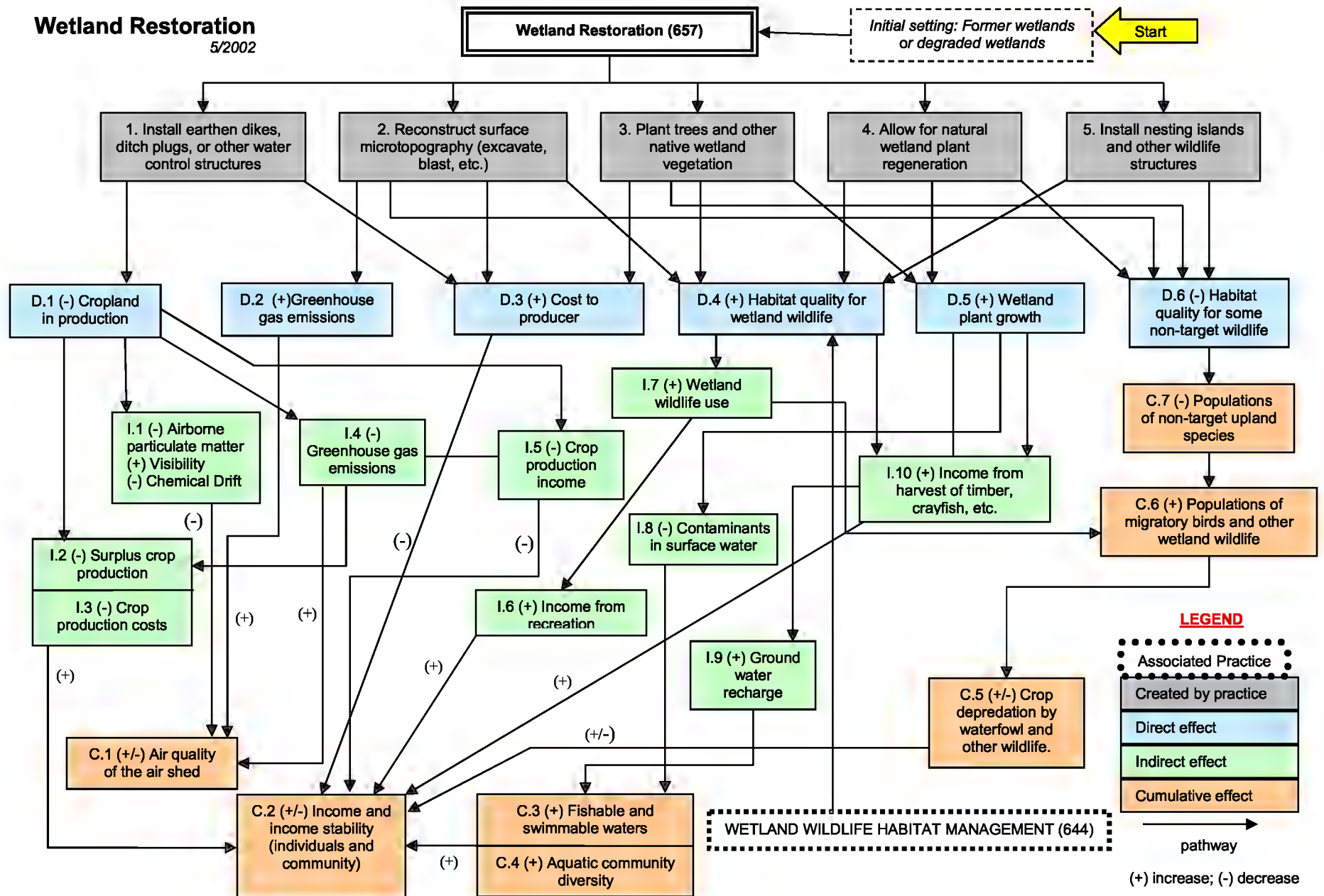
Wetland Restoration is commonly used in a Conservation Management System with practices such as Wetland Wildlife Habitat Management (644), Structure for Water Control (587), Dike (356), and Riparian Forest Buffer (391).

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the conservation effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, and soil. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Wetland Restoration

5/2002



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

WETLAND CREATION

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 658



WETLAND CREATION

Wetland creation is the establishment of a wetland on a site that was historically nonwetland.

PRACTICE INFORMATION

Wetland creation applies to sites where no natural wetland occurred historically. These sites contain soils that are not hydric.

This practice does not apply to:

- a constructed wetland intended to treat point and nonpoint sources of water pollution
- wetland enhancement intended to rehabilitate a degraded wetland
- wetland restoration intended to return the soils, hydrology, vegetative community, and biological habitat to approximate original wetland conditions

The purpose of this practice is to create wetland functions and values.

The purposes, goals, and objectives of the creation must be clearly defined, including the appropriate criteria for the site and purposes. The soil, hydrology, and vegetative characteristics existing on the site and the contributing watershed must be documented. Native vegetative species should be used whenever possible. Water levels can be controlled to prevent oxidation of organic soils and for vegetation management.

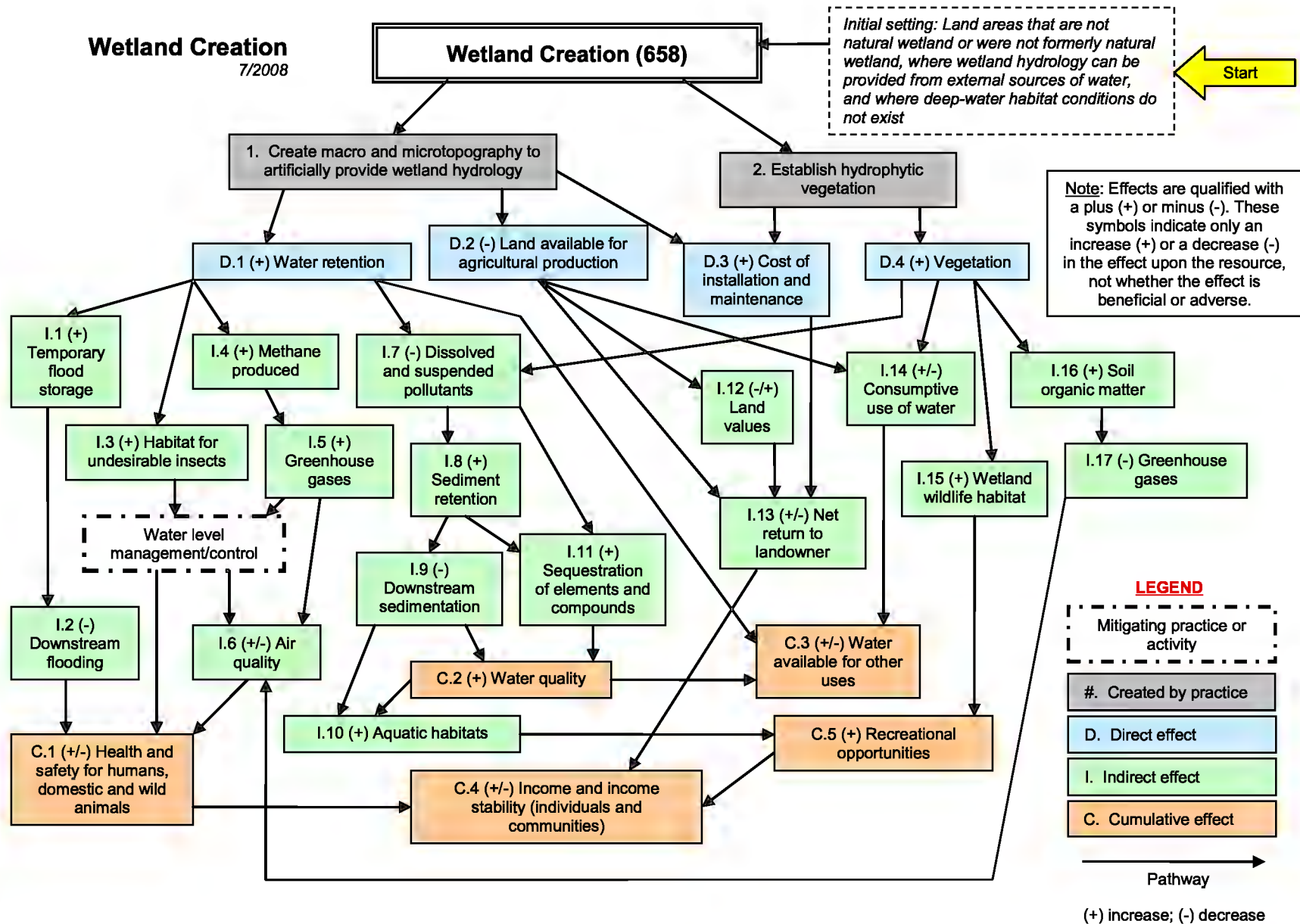
COMMON ASSOCIATED PRACTICES

Wetland Creation is commonly used in a Conservation Management System with the following practices: Dike (356), Structure for Water Control (587), Grade Stabilization Structure (410), Pond Sealing and Lining (521 A–D), and Use Exclusion (472).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated practice specifications and job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

Wetland Creation
7/2008



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

WETLAND ENHANCEMENT

PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service—Practice Code 659



WETLAND ENHANCEMENT

Wetland Enhancement is the rehabilitation or re-establishment of a degraded wetland, and/or the modification of an existing wetland to favor specific wetland functions.

PRACTICE INFORMATION

This practice applies on any degraded or non-degraded existing wetland where the objective is specifically to enhance selected wetland functions. This practice is not used on degraded wetlands when the soils, hydrology, vegetative community, and biological habitat are returned to original conditions or where a wetland is created on a site that historically was not a wetland.

The purpose of this practice is to provide specific wetland conditions by:

- Hydrologic enhancement (depth duration and season of inundation, and/or duration and season of soil saturation)

and/or

- Vegetative enhancement (including the removal of undesired species, and/or seeding or planting of desired species).

Native vegetative species should be used in the enhancement whenever possible. Manipulation of water levels can be used to control unwanted vegetation. Haying or grazing can also be used to manage vegetation.

COMMON ASSOCIATED PRACTICES

Wetland Enhancement is commonly used in a Conservation Management System with the following practices: Dike (356), Structure for Water Control (587), Fence (382), Fish Passage (396), Pipeline (516), Pond (378), and Use Exclusion (472).

For further information, refer to the practice standard in the local Field Office Technical Guide and associated job sheets.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

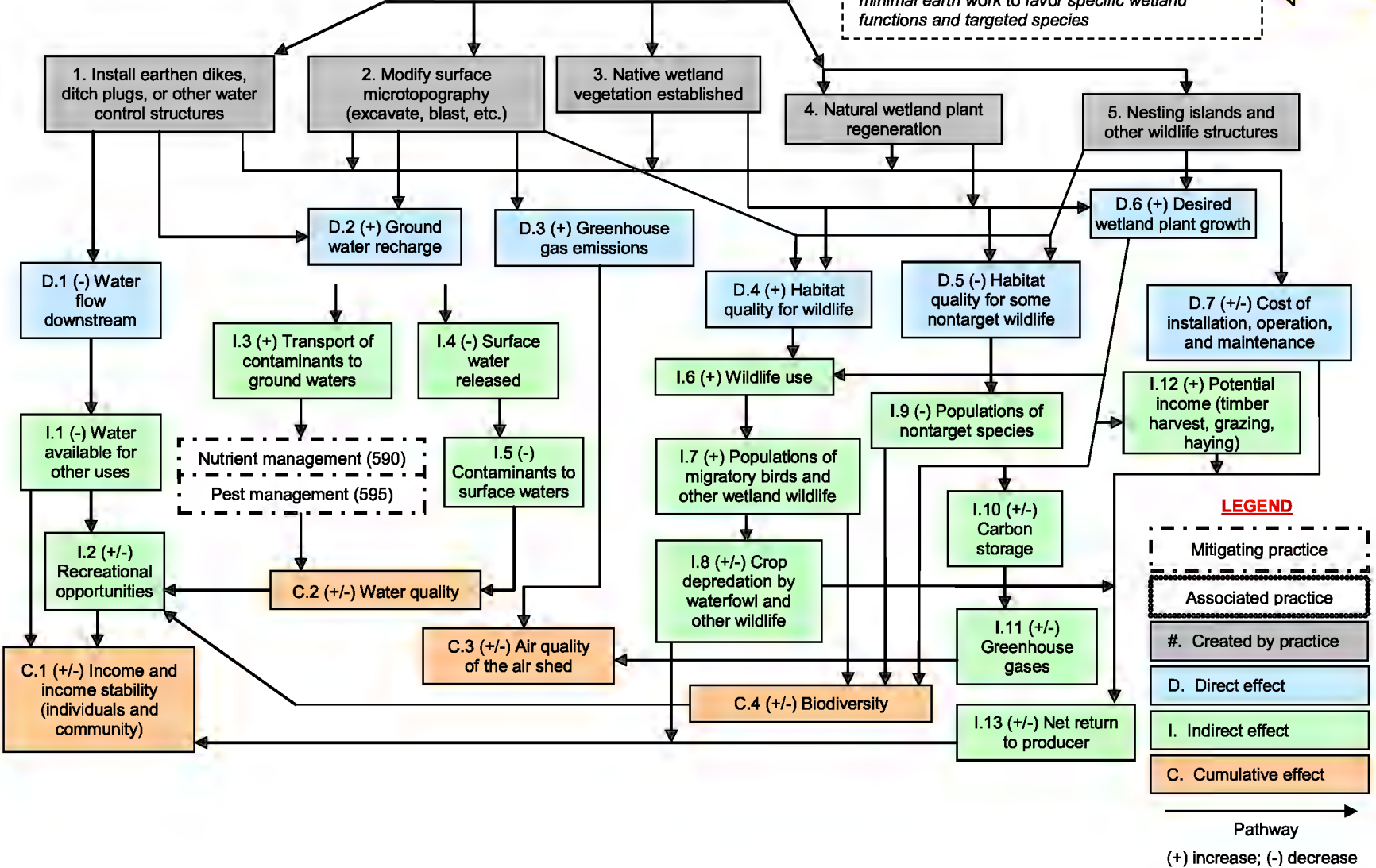
I.5 (-)
Contaminants
to surface
waters

Wetland Enhancement 7/2008

Wetland Enhancement (659)

Initial setting: Small freshwater wetlands or degraded wetlands where hydrologic or vegetative enhancement is needed and can be achieved with minimal earth work to favor specific wetland functions and targeted species

Start



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse. **The scope of the practice implementation and resulting effects are limited to those described in the "initial setting." Larger wetland projects requiring substantial earth work or involving marshes or other brackish waters may need to be evaluated in a site-specific EA.**

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.