# **TECHNICAL NOTES**

U.S. DEPARTMENT OF AGRICULTURE

STATE OF COLORADO

NATURAL RESOURCES CONSERVATION SERVICE

#### PLANT MATERIALS TECHNICAL NOTE NO. 59 (REVISED)

**SEPTEMBER 2011** 

To: All Offices

From: Christine Taliga

Plant Materials Specialist

### Plant Suitability and Seeding Rates for Conservation Plantings in Colorado

This revised Technical Note provides guidance for planners, producers and consultants to develop plant suitability and seeding rate recommendations for conservation plantings within Colorado.

The tables included with this Technical Note list general Climate Characteristics, Seeding Dates, Synonymy, Retardance Factors for Grassed Waterways and Seeding Rates and Species Suitability for selected conservation plantings by Major Land Resource Area (MLRA). A revised Colorado MLRA – Average Annual Precipitation map is also included.

#### General

In order to use this technical note to develop conservation planting recommendations, first identify the MLRA delineation and precipitation potential for your site. Next, go to the Suitability Table and select species based on local site conditions and the Conservation Practice to be applied. Then identify the appropriate seeding rates and dates for the selected species.

Seed mix recommendations developed for Critical Area Planting and erosion control purposes shall be comprised of at least 50 percent adapted sod forming species.

#### **Plant Suitability**

In many cases, the selection of adapted cultivars is just as important as the selection of adapted species for the proper functioning of vegetative conservation practices. Some species and cultivars grow over wide geographic areas while others have specific site requirements. Species and cultivars seeded outside their range of adaptation may exhibit poor establishment, decreased forage and seed yields and short-lived stands due to winterkill, drought or excessive soil moisture.

The use of named cultivars that have been evaluated under similar field conditions in similar MLRAs is generally recommended. Good performance can be expected when adapted species and cultivars are planted within prescribed soil, climate and site limitations.

#### **Seeding Rates**

Actual seeding rates shall be within 90 to 125 percent of the rates given in this Technical Note.

Nonirrigated seeding rates should be used in areas that will only be irrigated during establishment or if the area will only receive supplemental irrigation.

This Technical Note does not provide specific seeding rate recommendations for row plantings for seed production. Generally, seeding rates for 30 to 40 inch row plantings are 1/4 to 1/3 of the drilled rates for solid stand plantings, or 20 to 40 seeds per linear foot of row.

Seeding rate recommendations provided in this Technical Note are given in pounds Pure Live Seed (PLS) per acre. To determine pounds PLS from a Seed Tag, multiply the Percent Purity X Percent Germination X Total Bulk Pounds. Seed Tag Analysis is required by State and Federal Seed Laws.

#### How to calculate PLS quantities for a mixture from seed tag analysis:

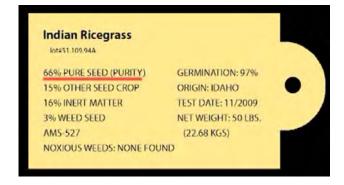
<u>Species</u>	Percent Purity in Mix	Percent Germination	Total <u>Bulk Pounds</u>	Pounds <u>PLS</u>		
Western wheatgrass	47.67 X	.90 X	816.5 =	350		
Sideoats grama	14.25 X	.86 X	816.5 =	100		
Green needlegrass	8.28 X	.74 X	816.5 =	50		
Blue grama	7.66 X	.80 X	816.5 =	50		

Or another approach to computating pure live seed: Calculated by the % germination and % purity as

verified by a seed-testing laboratory using the 400seed germination test.

#### <u>% Purity X % Germination</u> = PLS 100

From the seed tag below for Indian ricegrass:



If, for example, the customer wants Indian ricegrass to make up 25% of the seeding mix, with a recommended drill seeding rate of 4 lbs./acre PLS they will need 1PLS lb. of Indian ricegrass. How many bulk pounds will be required?

#### # of PLS lbs needed = Bulk lbs. percent PLS

1/.64 = 1.5 Bulk Pounds

#### How to compute seeding rates for mixtures:

Decrease the given Solid Stand Seeding Rate for individual species proportional to the percentage of the species in the mixture.

Example - Nonirrigated drilled seeding mixture for Range Seeding

<u>Species</u>	Perce <u>Mix</u>	nt of	Solid Stand Seeding Rate		Mixture <u>Seeding Rate</u>
Sideoats grama	.50	X	4.5	=	2.25 lbs PLS per acre
Blue grama	.30	Χ	1.5	=	0.45 lbs PLS per acre
Western wheatgrass	.20	Χ	8.0	=	1.60 lbs PLS per acre

#### Example - Nonirrigated drilled seeding mixture for Critical Area Planting

<u>Species</u>	Perce <u>Mix</u>	nt of	Solid Sta Seeding	-	Mixture Seeding Rate
Western wheatgrass	.75	X	16	= =	12.00 lbs PLS per acre
Streambank wheatgrass	.25	X	11		5.50 lbs PLS per acre

#### How to calculate seeds per square foot from pounds of pure live seed:

Given: 170,000 clean seeds/1 pound of Eriogonum heracleoides Nutt.

If that pound were evenly spread out over one acre (43,560 ft.2)...

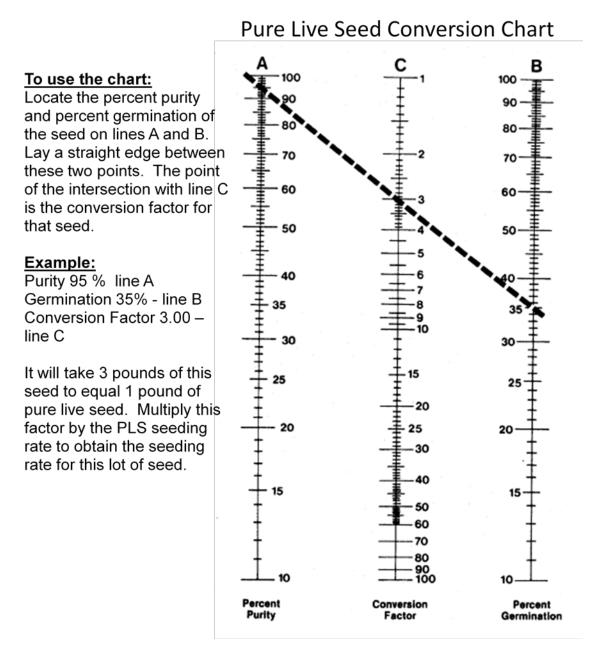
170,000 seeds/lb÷43,560 ft.<sup>2</sup>=3.9 or ≈ .... 4 seeds per square foot



Whorled buckwheat (*Eriogonum heracleoides*) seed. Photo by Derek Tilley.

## <u>How do you take the seeds per square foot and calculate the seeding rate expressed as pounds</u> PLS per acre?

Base your calculation on <u>drilling</u> 20 pure live seeds per foot for non-irrigated sites and 40 pure live seeds per foot for irrigated plantings. Thus, in our example, 20 divided by 3.9 seeds per square foot per PLS pound equals a <u>drilling</u> rate of 5.1 pounds PLS per acre for a non-irrigated planting. The drilling rate for an irrigated planting would be 10.2 pounds PLS per acre.

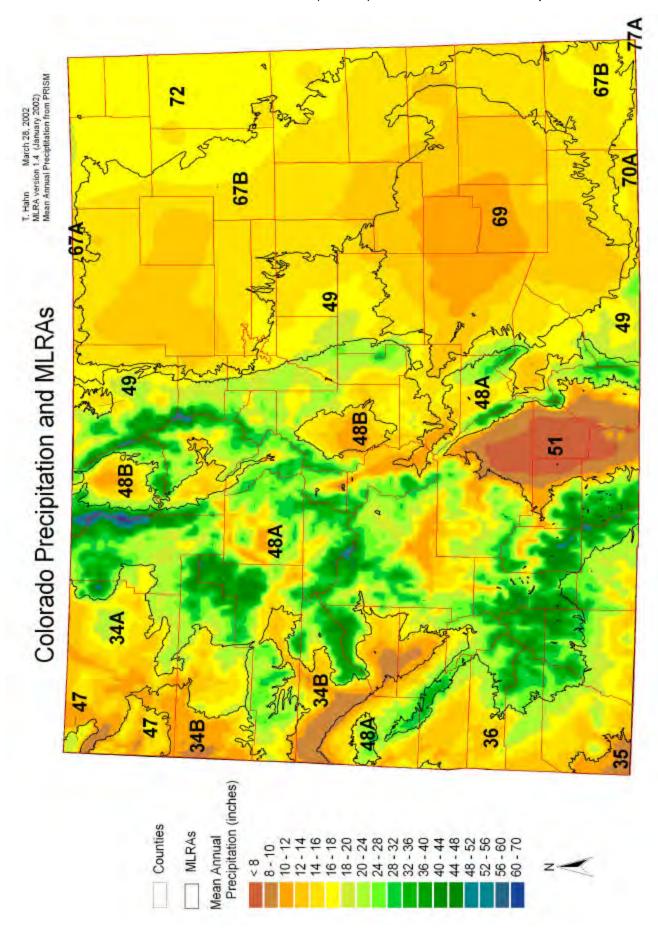


#### References:

- 1. "Why Pure Live Seed" Manhattan Plant Materials Center 2010
- 2. "A Field Guide for Collecting Native Seeds in Nevada", University of Nevada Reno Cooperative Extension 2003.

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NRCS, CO September 2002

Table 1. Climate Colorado	e and Elevatio	n Characteristi	cs for Major La	nd Resource A	reas (MLRAs)	within			
MLRA		ual Precipitation ches		ree Period ree days	Elevation feet				
D-34A D-34B D-35 D-36 E-47 E-48A E-48B E-51 G-67A G-67B north G-67B south G-69 H-70A	min.	max.	min.	max.	min.	max.			
D-34A	8	18	80	120	5,400	8,200			
D-34B	8	14	110	190	4,200	8,500			
D-35	8	12	120	140	4,800	6,400			
D-36	10	20	70	140	4,500	8,000			
E-47	10	16	70	110	4,900	8,800			
E-48A	10	60	< 70	120	7,000	14,433			
E-48B	10	16	16	< 70	85	7,500	10,000		
E-49	10	18	90	160	5,500	7,300			
E-51	< 8	10	90	120	7,400	8,800			
G-67A	16	18	120	140	5,200	6,200			
G-67B north	12	16	120	160	3,900	6,200			
G-67B south	14	18	120	180	3,800	6,200			
G-69	10	16	140	160	3,600	6,600			
H-70A	14	18	160	180	3,400	6,880			
H-72	14	18	140	160	3,400	4,600			
H-77A	14	18	160	180	3,400	6,560			

Table 2. Seeding D	Dates for Conservation	Plantings by Major L	and Resource Areas	(MLRAs) within
MLRA	Cool Seas	son Plants	Warm Sea	son Plants
IVILKA	Dormant-Spring	Summer	Dormant-Spring	Summer
D 34A&B, D 35, and D 36	Oct. 25 to Apr. 30	Jul. 15 to Sep. 15	Oct. 15 to Apr. 30	Jun. 15 to Jul. 15
E 47	Oct. 15 to Apr. 30		Oct. 1 to Apr. 30	Jun. 15 to Jul. 15
E 48A&B	Oct. 15 to Apr. 30	Jun. 15 to Jul. 15	Oct. 1 to Apr. 30	Jun. 15 to Jul. 15
E 49	Oct. 15 to May 15	Aug. 1 to Aug. 31 (irrigated sites)	Oct. 15 to May 31	
E 51	Oct. 25 to Apr. 15	Jul. 15 to Aug. 31	Oct. 15 to Apr. 15	Jun. 15 to Jul. 15
G 67B south, H 70A, and H 77A	Nov. 1 to Apr. 30	Aug. 15 to Sep. 15 (irrigated sites)	Nov. 1 to May 15	
G 67A, G 67B north, and H 72	Nov. 1 to Apr. 30	Aug. 15 to Sep. 15 (irrigated sites)	Nov. 1 to May 15	
G-69	Nov. 1 to Apr. 30	Aug. 15 to Sep. 15 (irrigated sites)	Nov. 1 to May 31	

Table 3. Synonomy	/ Cross Reference							
Common Name		Current Genus species	Previous Genus species					
subalpine	fir	Abies lasiocarpa	Abies lasiocarpa					
Rocky Mountain	maple	Acer glabrum	Acer glabrum					
boxelder	boxelder	Acer negundo	Acer negundo					
western	yarrow	Achillea millefolium occidentalis	Achillea lanulosa					
crested	wheatgrass	Agropyron cristatum	Agropyron cristatum					
crested	wheatgrass	Agropyron cristatum X desertorum	Agropyron cristatum X desertorum					
thickspike	wheatgrass	Elymus lanceolatus ssp. lanceolatus	Agropyron dasystachyum					
crested	wheatgrass	Agropyron desertorum	Agropyron desertorum					
tall	wheatgrass	Thinopyrum ponticum	Agropyron elongatum					
intermediate	wheatgrass	Thinopyrum intermedium	Agropyron intermedium					
streambank	wheatgrass	Elymus lanceolatus ssp. psammophilus	Agropyron riparium					
Siberian	wheatgrass	Agropyron fragile	Agropyron sibericum					
western	wheatgrass	Pascopyrum smithii	Agropyron smithii					
beardless	wheatgrass	Pseudorogneria spicata ssp. inermis	Agropyron spicatum inerme					
bluebunch	wheatgrass	Pseudorogneria spicata ssp. spicata	Agropyron spicatum spicatum					
slender	wheatgrass	Elymus trachycaulus	Agropyron trachycaulum					
pubescent	wheatgrass	Thinopyrum intermedium	Agropyron trichophorum					
redtop	bentgrass	Agrostis gigantea	Agrostis alba					
creeping	bentgrass	Agrostis stolonifera	Agrostis palustris					
ticklegrass	bentgrass	Agrostis scabra	Agrostis scabra					
thinleaf	alder	Alnus incana ssp. tenuifolia	Alnus incana tenuifolia					
alpine	foxtail	Alopecurus alpinus	Alopecurus alpinus glaucus					
creeping meadow	foxtail	Alopecurus arundinaceus	Alopecurus arundinaceus					
meadow	foxtail	Alopecurus pratensis	Alopecurus pratensis					
Saskatoon	serviceberry	Amelanchier alnifolia	Amelanchier alnifolia					
Utah	serviceberry	Amelanchier utahensis	Amelanchier utahensis					
leadplant	leadplant	Amorpha canescens	Amorpha canescens					
big	bluestem	Andropogon gerardii	Andropogon gerardii					
sand	bluestem	Andropogon hallii	Andropogon gerardii paucipilus					
yellow	bluestem	Bothriochloa ischaemum	Andropogon ischaemum					
little	bluestem	Schizachyrium scoparium	Andropogon scoparium					
Colorado blue	columbine	Aquilegia caerulea	Aquilegia caerulea					
fringed	sagebrush	Artemisia frigida	Artemisia frigida					
Louisiana	sage	Artemisia ludoviciana	Artemisia ludoviciana					
mountain big	sagebrush	Artemisia tridentata ssp. vaseyana	Artemisia tridentata vaseyana					
cicer	milkvetch	Astragalas cicer	Astragalas cicer					
fourwing	saltbush	Atriplex canescens	Atriplex canescens					
bog	birch	Betula nana	Betula glandulosa					
water	birch	Betula occidentalis	Betula occidentalis					
pine	dropseed	Blepharoneuron tricholepis	Blepharoneuron tricholepis					
sideoats	grama	Bouteloua curtipendula	Bouteloua curtipendula					
blue	grama	Bouteloua gracilis	Bouteloua gracilis					
nodding	brome	Bromus anomalus	Bromus anomalus					
meadow	brome	Bromus biebersteinii	Bromus biebersteinii					

Table 3. Synonom	y Cross Reference		
Common Name		Current Genus species	Previous Genus species
smooth	brome	Bromus inermis	Bromus inermis
mountain	brome	Bromus marginatus	Bromus marginatus
buffalograss	buffalograss	Buchloe dactyloides	Buchloe dactyloides
bluejoint	reedgrass	Calamagrostis canadensis	Calamagrostis canadensis
prairie	sandreed	Calimovilfa longifolia	Calimovilfa longifolia
purple	poppymallow	Callirhoe involucrata	Callirhoe involucrata
marsh	marigold	Caltha leptosepala	Caltha leptosepala
Siberian	peashrub	Caragana arborescens	Caragana arborescens
water	sedge	Carex aquatilis	Carex aquatilis
silvery	sedge	Carex canescens	Carex canescens
douglas	sedge	Carex douglasii	Carex douglasii
threadleaf	sedge	Carex filifolia	Carex filifolia
elk	sedge	Carex geyeri	Carex geyeri
smallwing	sedge	Carex microptera	Carex microptera
Nebraska	sedge	Carex nebrascensis	Carex nebraskensis
clustered field	sedge	Carex praegracilis	Carex praegracilis
beaked	sedge	Carex utriculata	Carex rhynchophysa
slender	sedge	Carex simulata	Carex simulata
awl fruited	sedge	Carex stipata	Carex stipata
fox	sedge	Carex vulpinoidea	Carex vulpinoidea
hackberry	hackberry	Celtis occidentalis	Celtis occidentalis
winterfat	winterfat	Krascheninnikovia lanata	Ceratoides lanata
curlleaf	mountain mahogany	Cercocarpus ledifolius	Cercocarpus ledifolius
true	mountain mahogany	Cercocarpus montanus	Cercocarpus montanus
rubber	rabbitbrush	Ericameria nauseosa	Chrysothamnus nauseosus
douglas	rabbitbrush	Chrysothamnus viscidiflorus	Chrysothamnus viscidiflorus
bladder	senna	Colutea arborescens	Colutea arborescens
redosier	dogwood	Cornus sericea sericea	Cornus stolonifera
black	hawthorn	Crateagus douglasii	Crateagus douglasii
orchardgrass	orchardgrass	Dactylis glomerata	Dactylis glomerata
tufted	hairgrass	Deschampsia caespitosa	Deschampsia caespitosa
inland	saltgrass	Distichlis spicata	Distichlis stricta
common	spikerush	Eliocharis palustris	Eliocharis palustris
altai	wildrye	Leymus angustus	Elymus angustus
Canada	wildrye	Elymus canadensis	Elymus canadensis
basin	wildrye	Leymus cinerius	Elymus cinerius
mammoth	wildrye	Leymus racemosus	Elymus giganteus
Russian	wildrye	Psathyrostachys juncea	Elymus junceus
Snake River	wheatgrass	Elymus wawawaiensis	Elymus lanceolatus wawawai
beardless	wildrye	Leymus triticoides	Elymus trichoides
green	ephedra	Ephedra viridis	Ephedra viridis
sand	lovegrass	Eragrostis trichodes	Eragrostis trichodes
sulphur-flower	buckwheat	Eriogonum umbellatum	Eriogonum umbellatum
Apache plume	Apache plume	Falugia paradoxa	Falugia paradoxa

Table 3. Synonom	y Cross Reference		
Common Name		Current Genus species	Previous Genus species
Arizona	fescue	Festuca arizonica	Festuca arizonica
tall	fescue	Lolium arundinaceum	Festuca arundinacea
Idaho	fescue	Festuca idahoensis	Festuca idahoensis
sheep	fescue	Festuca ovina	Festuca ovina
hard	fescue	Festuca trachyphylla	Festuca ovina duriscula
red	fescue	Festuca rubra	Festuca rubra
Thurber's	fescue	Festuca thurberi	Festuca thurberi
green	ash	Fraxinus pensylvanicus	Fraxinus pensylvanicus
common	blanketflower	Gaillardia aristata	Gaillardia aristata
Richard's	geranium	Geranium richardsonii	Geranium richardsonii
largeleaf	avens	Geum macrophyllum perincisum	Geum macrophyllum perincisum
fowl	mannagrass	Glyceria striata	Glyceria striata
Utah	sweetvetch	Hedysarum boreale	Hedysarum boreale
maximilian	sunflower	Helianthus maximiliani	Helianthus maximiliani
Nuttall's	sunflower	Helianthus nutallii	Helianthus nutallii
hairy false	goldenaster	Heterotheca villosa	Heterotheca villosa
galleta	galleta	Pleuraphis jamesii	Hilaria jamesii
Rocky Mountain	iris	Iris missouriensis	Iris missouriensis
baltic	rush	Juncus balticus	Juncus balticus
Colorado	rush	Juncus confusus	Juncus confusus
Drummond's	rush	Juncus drummondii	Juncus drummondii
swordleaf	rush	Juncus ensifolius	Juncus ensifolius
inland	rush	Juncus interior	Juncus interior
longstyle	rush	Juncus longistylis	Juncus longistylis
Merten's	rush	Juncus mertensianus	Juncus mertensianus
knotted	rush	Juncus nodosus	Juncus nodosus
Torrey's	rush	Juncus torreyi	Juncus torreyi
common	juniper	Juniperus communis	Juniperus communis
oneseed	juniper	Juniperus monosperma	Juniperus monosperma
Utah	juniper	Juniperus ostoesperma	Juniperus ostoesperma
Rocky Mountain	juniper	Juniperus scopulorum	Juniperus scopulorum
eastern	redcedar	Juniperus virginiana	Juniperus virginiana
prairie	junegrass	Koelaria macrantha	Koelaria cristata
dotted	gayfeather	Liatris punctata	Liatris punctata
blue	flax	Linum perenne	Linum lewisii
twinberry	honeysuckle	Lonicera involucrata	Lonicera involucrata
birdsfoot	trefoil	Lotus corniculatus	Lotus corniculatus
silvery	lupine	Lupinus argenteus	Lupinus argenteus
alfalfa	alfalfa	Medicago sativa	Medicago sativa
purple	oniongrass	Melica spectabilis	Melica spectabilis
yellow	sweetclover	Melilotus officinalis	Melilotus officinalis
mountain	bluebells	Mertensia ciliata	Mertensia ciliata
wildbergamot	beebalm	Monarda fistulosa	Monarda fistulosa
mountain	muhly	Muhlenbergia montana	Muhlenbergia montana

Table 3. Synonomy	y Cross Reference		
Common Name		Current Genus species	Previous <i>Genus species</i>
sandhill	muhly	Muhlenbergia pungens	Muhlenbergia pungens
marsh	muhly	Muhlenbergia racemosa	Muhlenbergia racemosa
spike	muhly	Muhlenbergia wrightii	Muhlenbergia wrightii
tufted	evening-primrose	Oenothera caespitosa	Oenothera caespitosa
sainfoin	sainfoin	Onobrychis viciaefolia	Onobrychis viciaefolia
indian	ricegrass	Achnatherum hymenoides	Oryzopsis hymenoides
vinemesquite	vinemesquite	Panicum obtusum	Panicum obtusum
switchgrass	switchgrass	Panicum virgatum	Panicum virgatum
narrow leaf	penstemon	Penstemon angustifolius	Penstemon angustifolius
Rocky Mountain	penstemon	Penstemon strictus	Penstemon strictus
Whipple's	penstemon	Penstemon whippleanus	Penstemon whippleanus
purple	prairieclover	Dalea purpurea	Petalostamen purpureus
reed	canarygrass	Phalaris arundinacea	Phalaris arundinacea
alpine	timothy	Phleum alpinum	Phleum alpinum
timothy	timothy	Phleum pratense	Phleum pratense
common	reed	Phragmites australis	Phragmites australis
engelmann	spruce	Picea engelmannii	Picea engelmannii
Colorado blue	spruce	Picea pungens	Picea pungens
ponderosa	pine	Pinus ponderosa	Pinus ponderosa
alpine	bluegrass	Poa alpina	Poa alpina
big	bluegrass	Poa secunda	Poa ampla
canby	bluegrass	Poa secunda	Poa canbii
Canada	bluegrass	Poa compressa	Poa compressa
muttongrass	muttongrass	Poa fendleriana	Poa fendleriana
fowl	bluegrass	Poa palustris	Poa palustris
Kentucky	bluegrass	Poa pratensis	Poa pratensis
sandberg	bluegrass	Poa secunda	Poa sandbergii
narrowleaf	cottonwood	Populus angustifolia	Populus angustifolia
plains	cottonwood	Populus deltoides monilifera	Populus deltoides occidentalis
freemont	cottonwood	Populus fremontii	Populus fremontii
quaking	aspen	Populus tremuloides	Populus tremuloides
shrubby	cinquefoil	Dasiphora floribunda	Potentilla fruiticosa
american	plum	Prunus americana	Prunus americana
bessey	sandcherry	Prunus pumila var. besseyi	Prunus besseyi
chokecherry	chokecherry	Prunus virginiana	Prunus virginiana
hybrid	wheatgrass	Elymus hoffmannii	Pseudorogneria spicata X Elytigra repens
douglas	fir	Pseudotsuga menziesii	Pseudotsuga menziesii
Nuttall's	alkaligrass	Puccinellia nuttalliana	Puccinellia airoides
antelope	bitterbrush	Purshia tridentata	Purshia tridentata
gambel	oak	Quercus gambelii	Quercus gambelii
upright	prairie coneflower	Ratibida columnifera	Ratibida columnifera
skunkbush	sumac	Rhus trilobata	Rhus trilobata
golden	currant	Ribes aureum	Ribes aureum
wax	currant	Ribes cereum	Ribes cereum

Table 3. Synonomy	Cross Reference							
Common Name		Current Genus species	Previous Genus species					
gooseberry	currant	Ribes montigenum	Ribes montigenum					
woods	rose	Rosa woodsii	Rosa woodsii					
thimbleberry	thimbleberry	Rubus parviflorus	Rubus parviflorus					
arrowhead	arrowhead	Sagittaria latifolia	Sagittaria latifolia					
peachleaf	willow	Salix amygdaloides	Salix amygdaloides					
bebb	willow	Salix bebbiana	Salix bebbiana					
Booth's	willow	Salix boothii	Salix boothii					
Drummond's	willow	Salix drummondiana	Salix drummondiana					
sandbar	willow	Salix exigua	Salix exigua					
Geyer's	willow	Salix geyeriana	Salix geyeriana					
planeleaf	willow	Salix planifolia	Salix planifolia					
Scouler's	willow	Salix scouleriana	Salix scouleriana					
blue	elderberry	Sambucus nigra ssp. cerulea	Sambucus coerulea					
small burnet	small burnet	Sanguisorba minor	Sanguisorba minor					
hardstem	bulrush	Schoenoplectus acutus	Scirpus acutus					
threesquare	bulrush	Schoenoplectus pungens pungens	Scirpus americanus					
pale	bulrush	Scirpus pallidus	Scirpus atrovirens pallidus					
alkali	bulrush	Schoenoplectus maritimus	Scirpus paludosus					
small fruited	bulrush	Scirpus microcarpus	Scirpus microcarpus					
softstem	bulrush	Schoenoplectus tabernaemontani	Scirpus validus					
silver	buffaloberry	Shepherdia argentea	Shepherdia argentea					
russet	buffaloberry	Shepherdia canadensis	Shepherdia canadensis					
bottlebrush	squirreltail	Elymus elymoides	Sitanion hystrix					
yellow	indiangrass	Sorghastrum nutans	Sorghastrum nutans					
giant	bur-reed	Sparganium eurycarpum	Sparganium eurycarpum					
prairie	cordgrass	Spartina pectinata	Spartina pectinata					
scarlet	globemallow	Sphaeralcea coccinea	Sphaeralcea coccinea					
alkali	sacaton	Sporobolus airoides	Sporobolus airoides					
alkali	muhly	Muhlenbergia asperifolia	Sporobulus asperifolius					
needleandthread	needleandthread	Hesperostipa comata	Stipa comata					
green	needlegrass	Nassella viridula	Stipa viridula					
common	snowberry	Symphoricarpus albus	Symphoricarpus albus					
western	snowberry	Symphoricarpus occidentalis	Symphoricarpus occidentalis					
mountain	snowberry	Symphoricarpus oreophilus	Symphoricarpus oreophilus					
alsike	clover	Trifolium hybridum	Trifolium hybridum					
white	clover	Trifolium repens	Trifolium repens					
broadleaf	cattail	Typha latifolia	Typha latifolia					
american	vetch	Vicia americana	Vicia americana					

Genus species	Notes		Soil pH	Soil	Text	ures				ı	N	Иаjo	r La	nd R	esou	ırce	Are	а						tardar Annu	al Pre	ecipit	ation		
(common name)			Range	s	L	С	D 34A	D 34B	D 35	9E Q	E 47	E 48A	E 48B	E 49	E 51	G 67A	G 67B N	G 67B S	G 69	H 70A	Н 72	H 77A	8	10	12	nes) <sup>*</sup>	16	18	20
Agropyron cristatum (crested wheatgrass)	ICB	2) 6)	6.0-8.5		х	х	х	х	Х	х	Х	Х	Х	Х	Х	Х	Х	Х	0	_	Х	_	-	D	С	С	В	В	В
Agropyron cristatum X desertorum (crested wheatgrass)	ICB	2) 6)	6.0-8.5		х		Х	х	х	х	Х	Х	х	х	х	Х	х	х			х		D	D	С	С	В	В	В
Agrostis gigantea (redtop)	ICS	4) 5)	4.5-8.0		Х		Х			х	Х	Х	х	Х									-	-	-	-	С	С	С
Alopecurus arundinaceus (creeping meadow foxtail)	ICS	3) 4) 5)	5.6-8.4		Х	Х	Х			Х		Х	Х										-	-	-	-	-	С	С
Andropogon gerardii (big bluestem)	NWS	6)	5.6-8.4	х	Х							Х		х		Х	Х	х	Χ	Х	Х	х	-	-	-	-	С	С	С
Bouteloua curtipendula (sideoats grama)	NWB	2) 6)	5.3-7.8		Х	Х			Х	Х				Х	Х	Х	Х	Х	Х	Х	Х	Х	-	-	D	С	С	С	С
Bouteloua gracilis (blue grama)	NWB	2) 6)	6.6-8.4	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	-	-	D	С	В	В	В
Bromus inermis (smooth brome)	ICS	6)	5.5-8.0	Х	Х	Х	Х			Х	Х	Х	Х	Х		Х	Х	Х	Χ	Х	Х	Х	-	-	-	D	С	С	В
Buchloe dactyloides (buffalograss)	NWS	6)	6.5-8.0		Х	Х								Х		Х	Х	Х	Х	Х	Х	Х	-	Е	Е	Е	D	D	D
Calimovilfa longifolia (prairie sandreed)	NWS	6)	5.6-8.4	Х	Х									Х		Х	Х	Х	Х	Х	Х	Х	-	-	D	D	D	D	D
Elymus lanceolatus (thickspike wheatgrass)	NCS	6)	5.5-8.0	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х			Х		-	С	С	С	С	В	В
Elymus lanceolatus psammophilus (streambank wheatgrass)	NCS	6)	6.6-8.4	х	Х	Х	Х			х		Х	Х	Х	Х								-	-	С	С	С	В	В
Festuca trachyphylla (hard fescue)	ICB	2) 6)	4.5-8.0		Х	Х	Х			Х	Х	Х	Х	Х									-	-	-	D	С	С	С
Lolium arundinaceum (tall fescue)	ICB	2) 3) 4) 6)	5.0-9.0		Х	Х	Х			Х	Х	Х		Х		Х	Х	Х	Х				-	-	-	-	С	В	В
Pascopyrum smithii (western wheatgrass)	NCS	3) 4) 6)	4.5-9.0		Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	-	-	-	D	С	С	В
Phalaris arundinacea (reed canarygrass)	NCS	3) 4) 5)	6.6-9.0		Х	Х	Х			х		Х											-	-	-	-	-	В	Α
Phleum pratense (timothy)	ICB	2) 4) 5)	5.0-7.8		Х	Х	Х			х		Х											-	-	-	-	-	С	С
Poa pratensis (Kentucky bluegrass)	ICS	4) 6)	5.0-8.4		Х	Х	Х			х		Х											-	-	-	-	-	С	С
Schizachyrium scoparium (little bluestem)	NWB	2) 6)	5.6-8.4	х	Х	Х						Х		Х		Х	Х	Х	Χ	Х	Х	Х	-	-	D	D	С	С	С
Sporobolus airoides (alkali sacaton)	NWB	2) 3) 4) 5)	6.6-9.0		Х	Х	Х	Х	Х	х	Х	Х	Х	Х	Х	Х	Х	Х	Χ	Х	Х	Х	-	D	D	D	С	С	С
Thinopyrum intermedium (intermediate wheatgrass)	ICS	6)	5.6-8.5		Х	Х	Х			Х	Х	Х	Х	х		Х	Х	Х	Х	Х	Х	Х	-	-	-	С	С	С	В
Thinopyrum intermedium (pubescent wheatgrass)	ICS	6)	5.6-8.4	х	Х		Х	Х		Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	-	-	С	С	В	В	В
Thinopyrum ponticum (tall wheatgrass)	ICB	2) 3) 4) 5)	6.6-10		Х	Х	Х			Х		Х	Х	х	Х	Х	Х	Х	Х	Х	Х	Х	-	-	-	-	В	В	Α
Trifolium fragiferum (strawberry clover)	IL	2) 3) 4) 5)	6.0-8.4		Х					Х						Х	Х	Х	Х	Х		Х	-	-	-	D	D	D	D
Trifolium pratense (red clover)	IL	2) 6)	6.0-7.5	х	х	х				х		х	Х	х		х	Х	х	х	х		х	-	-	D	D	D	D	D
Notes: L= introduced: N = native: C = coo																													

Notes: I = introduced; N = native; C = cool season; W = warm season; B = bunchgrass; S = sodformer; F = forb; L = legume; 1) Soil textures are general (S = sandy soils, L = loamy soils, C = clayey soils); 2) Mix with adapted sod-formers; 3) Suited for moist, saline lowland sites; 4) Suited for moist lowland sites; 5) Will tolerate prolonged periods (3 to 4 days) of inundation.

<sup>\*</sup> Design velocities shall not exceed those obtained by using the proceedures, "n"values, and recommendations in the NRCS Engineering Field Handbook, Part 560, Chapter 7, or Agricultural Research Service Agriculture Handbook 667, Stability Design of Grass-lined Open Channels.

<sup>\*\*</sup> Use a retardance factor for the next higher precipitation zone if 4 or more inches of supplemental moisture can be furnished above the average native precipitation amount.

Table 5. Graminoid, Forb and Shrul	b See	ding R	ates for	Conser	vation P	lantings	within (	Colorado	)	
			Seeds per	Seeds per square				eeding Rate	,	
Genus species (common name - Cultivar)	Notes		pound (1,000s)	foot per pound planted	Irrig	ated	Nonir	rigated	,	Riparian, Naterways
Ashilles and the fall and a side of the				per acre	drill	broadcast	drill	broadcast	drill	broadcast
Achillea millefolium occidentalis (western yarrow)	NF	2)	2,790	64.0	drill 0.05 d	or broadcast	t 0.1 pound	ls PLS per a	cre with gra	ass mixture
Achnatherum hymenoides (Indian ricegrass - Nezpar, Rimrock)	NCB	2) 4) 5)	235.0	5.4	8.0	16.0	4.0	8.0	8.0	16.0
Achnatherum hymenoides (Indian ricegrass - Paloma)	NCB	2) 4) 5)	140.0	3.2	12.0	24.0	6.0	12.0	12.0	24.0
Agropyron cristatum X desertorum (crested wheatgrass - Hycrest)	ICB	2)	302.0	6.9	6.0	12.0	3.0	6.0	6.0	12.0
Agropyron cristatum (crested wheatgrass - Ephraim)	ICB	2)	302.0	6.9	6.0	12.0	3.0	6.0	6.0	12.0
Agropyron desertorum (crested wheatgrass - Nordan)	ICB	2)	190.0	4.4	10.0	20.0	5.0	10.0	10.0	20.0
Agropyron fragile (Siberian wheatgrass - Vavilov)	ICB	2)	170.0	3.9	11.0	22.0	5.5	11.0	11.0	22.0
Agrostis gigantea (redtop)	ICS		4,900.0	112.5	0.5	1.0	0.3	0.6	0.5	1.0
Agrostis scabra (ticklegrass)	NCB	2)	5,000.0	114.8	0.5	1.0	0.3	0.6	0.5	1.0
Agrostis stolonifera (creeping bentgrass)	ICS		4,540.0	104.2	0.5	1.0	0.3	0.6	0.5	1.0
Alopecurus alpinus (alpine foxtail)	NCS		600.0	13.8	3.0	6.0	1.5	3.0	3.0	6.0
Alopecurus arundinaceus (creeping meadow foxtail - Garrison)	ICS		750.0	17.2	3.0	6.0	1.5	3.0	3.0	6.0
Alopecurus pratensis (meadow foxtail)	ICS		580.0	13.3	3.0	6.0	1.5	3.0	3.0	6.0
Amelanchier alnifolia (Saskatoon serviceberry)	NCSh	2) 4) 7)	82.0	1.9	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Amelanchier utahensis (Utah serviceberry)	NSh	2) 4) 7)	25.8	0.6	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Amorpha canescens (leadplant)	NLSh	2) 6) 7)	165.0	3.8	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Andropogon gerardii (big bluestem)	NWS		160.0	3.7	11.0	22.0	5.5	11.0	11.0	22.0
Andropogon hallii (sand bluestem)	NWS		110.0	2.5	16.0	32.0	8.0	16.0	16.0	32.0
Artemisia frigida (fringed sagebrush)	NCSh	2)	4,500.0	103.3	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Artemisia ludoviciana (Louisiana sage - Summit)	NCSF		2,495.0	57.3	0.7	1.4	0.3	0.7	0.7	1.4
Artemisia tridentata vaseyana (mountain big sagebrush - Hobble Creek)	NSh	2) 4) 6) 7)	1,726.0	39.6	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Astragalas cicer (cicer milkvetch)	ISL	3) 5) 7)	135.0	3.1	12.0	24.0	6.0	12.0	12.0	24.0
Atriplex canescens (fourwing saltbush - dewinged)	NSh	2) 4) 5)	55.4	1.3	drill 0.5 o	r broadcast	1.0 pounds	s PLS per a	cre with gra	ss mixture

Table 5. Graminoid, Forb and Shru	b See	ding R	ates for	Conser	vation F	Plantings	within (	Colorado	)	
0			Seeds per	Seeds per square				eeding Rate live seed)	,	
Genus species (common name - Cultivar)	Notes		pound (1,000s)	foot per pound planted	Irrig	gated	Nonir	rigated		Riparian, Waterways
Planka ranguran triakalania	1			per acre	drill	broadcast	drill	broadcast	drill	broadcast
Blepharoneuron tricholepis (pine dropseed)	NCB	2)	1,100.0	25.3	1.6	3.2	0.8	1.6	1.6	3.2
Bothriochloa ischaemum (yellow bluestem)	IWB		830.0	19.1	2.0	4.0	1.0	2.0	2.0	4.0
Bouteloua curtipendula (sideoats grama)	NWB	5)	191.0	4.4	9.0	18.0	4.5	9.0	9.0	18.0
Bouteloua gracilis (blue grama)	NWB	2)	711.0	16.3	3.0	6.0	1.5	3.0	3.0	6.0
Bromus anomalus (nodding brome)	NCB	2)	168.0	3.9	10.0	20.0	5.0	10.0	10.0	20.0
Bromus biebersteinii (meadow brome - Regar)	ICB	2)	93.0	2.1	17.0	34.0	11.0	22.0	17.0	34.0
Bromus inermis (smooth brome)	ICS		140.0	3.2	13.0	26.0	6.5	13.0	13.0	26.0
Bromus marginatus (mountain brome - Bromar, Garnet)	NCB	2)	78.0	1.8	20.0	40.0	10.0	20.0	20.0	40.0
Buchloe dactyloides (buffalograss - burr)	NWS	4) 5)	56.0	1.3	16.0	32.0	8.0	16.0	16.0	32.0
Buchloe dactyloides (buffalograss - grain)	NWS	4) 5)	275.0	6.3	6.0	12.0	3.0	6.0	6.0	12.0
Calamagrostis canadensis (bluejoint reedgrass)	NCS	4)	3,750.0	86.1					0.5	1.0
Calimovilfa longifolia (prairie sandreed)	NWS		274.0	6.3	6.5	13.0	3.5	7.0	6.5	13.0
Callirhoe involucrata (purple poppymallow)	NF	2)	600.0	13.8	drill 0.05 d	or broadcast	0.1 pound	ls PLS per a	cre with gr	ass mixture
Caltha leptosepala (marsh marigold)	NF	2)	400.0	9.2					4.5	9.0
Caragana arborescens (Siberian peashrub)	ILSh		19.0	0.4	drill 0.2 o	r broadcast	0.4 pounds	s PLS per a	cre with gra	ass mixture
Carex aquatilis (water sedge)	NB	2)	1,152.0	26.4					1.5	3.0
Carex geyeri (elk sedge)	NS		91.4	2.1			9.0	18.0		
Carex nebrascensis (Nebraska sedge)	NS		912.0	20.9					1.9	3.8
Carex simulata (slender sedge)	NS		971.0	22.3			0.9	1.8	1.8	3.6
Cercocarpus ledifolius (curlleaf mountain mahogany)	NSh	2) 4) 5) 6)	52.2	1.2	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
Cercocarpus montanus (true mountain mahogany - Montane)	NSh	2) 4) 5) 6)	45.0	1.0	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
Chrysothamnus viscidiflorus (douglas rabbitbrush)	NSh	2)	782.0	18.0	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
Colutea arborescens (bladder senna)	ILSh	2) 5)	34.0	0.8	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture

Table 5. Graminoid, Forb and Shru	b See	ding R	ates for	Conser	vation P	lantings	within (	Colorado	)	
			Seeds per	Seeds per square				eeding Rat	,	
Genus species (common name - Cultivar)	Notes		pound (1,000s)	foot per pound planted		ated		rigated	Grassed \	Riparian, Waterways
Cornus sericea sericea				per acre	drill	broadcast	drill	broadcast	drill	broadcast
(redosier dogwood)	NSh	2) 4)	18.5	0.4	drill 0.25 c	or broadcas	t 0.5 pound	s PLS per a	cre with gra	ass mixture
Dactylis glomerata (orchardgrass)	ICB	2) 4)	540.0	12.4	4.0	8.0	2.0	4.0	4.0	8.0
Dalea purpurea (purple prairieclover)	NWL	2)	275.0	6.3	6.0	12.0	3.0	6.0	6.0	12.0
Dasiphora floribunda (shrubby cinquefoil)	NSh		1,000.0	23.0	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Deschampsia caespitosa (tufted hairgrass)	NCB		1,300.0	29.8	1.5	3.0	1.0	2.0	1.5	3.0
Distichlis spicata (inland saltgrass)	NWS		520.0	11.9	3.0	6.0	1.5	3.0	3.0	6.0
Eliocharis palustris (common spikerush)	NCLS		620.0	14.2					2.8	5.6
Elymus canadensis (Canada wildrye)	NCB	2) 4)	115.0	2.6	10.0	20.0	5.0	10.0	10.0	20.0
Elymus elymoides (bottlebrush squirreltail)	NCB	2)	191.5	4.4	9.0	18.0	4.5	9.0	9.0	18.0
Elymus hoffmannii (hybrid wheatgrass - Newhy)	ıcs		110.9	2.5	14.0	28.0	10.0	20.0	14.0	28.0
Elymus lanceolatus lanceolatus (thickspike wheatgrass)	NCS		154.0	3.5	10.0	20.0	5.0	10.0	10.0	20.0
Elymus lanceolatus psammophilus (streambank wheatgrass)	NCS		156.0	3.6	11.0	22.0	5.5	11.0	11.0	22.0
Elymus trachycaulus (slender wheatgrass)	NCB	2)	160.0	3.7	11.0	22.0	5.5	11.0	11.0	22.0
Elymus wawawaiensis (Snake River wheatgrass)	NCB	2)	140.0	3.2	12.0	24.0	6.0	12.0	12.0	24.0
Ephedra viridis (green ephedra)	NSh	2)	25.0	0.6	drill 0.05 c	or broadcas	t 0.1 pound	s PLS per a	cre with gr	ass mixture
Eragrostis trichodes (sand lovegrass)	NWB	2) 4)	1,500.0	34.4	2.0	4.0	1.0	2.0	2.0	4.0
Ericameria nauseosa (rubber rabbitbrush)	NSh	2)	693.0	15.9	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Eriogonum umbellatum (sulphur-flower buckwheat)	NF	2) 6)	210.0	4.8	drill 0.05 c	or broadcas	t 0.1 pound	s PLS per a	cre with gra	ass mixture
Falugia paradoxa (Apacheplume)	NSh	2) 4)	540.0	12.4	drill 0.1 or	r broadcast	0.2 pounds	s PLS per a	cre with gra	ss mixture
Festuca arizonica (arizona fescue)	NCB	2)	411.0	9.4	4.5	9.0	2.5	4.5	4.5	9.0
Festuca idahoensis (Idaho fescue)	NCB	2)	450.0	10.3	3.5	7.0	2.0	4.0	3.5	7.0
Festuca ovina (sheep fescue - Covar)	NCB	2)	680.0	15.6	3.0	6.0	1.5	3.0	3.0	6.0
Festuca rubra (red fescue)	ICS	4)	615.0	14.1	3.0	6.0	1.5	3.0	3.0	6.0

Table 5. Graminoid, Forb and Shr	ıb See	ding R	ates for	Conserv	vation P	lantings	within (	Colorado	)	
			Seeds per	Seeds per square				eeding Rat	,	
Genus species (common name - Cultivar)	Notes		pound (1,000s)	foot per pound planted		ated		rigated	Grassed \	Riparian, Waterways
Festuca thurberi				per acre	drill	broadcast	drill	broadcast	drill	broadcast
(Thurber's fescue)	NCB	2)	995.0	22.8	2.0	4.0	1.0	2.0	2.0	4.0
Festuca trachyphylla (hard fescue - Durar)	ICB	2)	560.0	12.9	3.0	6.0	1.5	3.0	3.0	6.0
Gaillardia aristata (common blanketflower)	NF	2)	199.0	4.6	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
Geranium richardsonii (Richard's geranium)	NF	2)	40.0	0.9	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
Geum macrophyllum perincisum (largeleaf avens)	NSF		793.0	18.2					2.0	4.0
Glyceria striata (fowl mannagrass)	NS	4)	160.0	3.7					10.0	20.0
Hedysarum boreale (Utah sweetvetch - Timp)	NCL	2) 3) 4) 6)	80.0	1.8	22.0	44.0	11.0	22.0	22.0	44.0
Helianthus maximiliani (Maximilian sunflower)	NWF	2)	150.0	3.4	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
Helianthus nutallii (Nuttall's sunflower)	NCSF		125.0	2.9	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
Hesperostipa comata (needleandthread)	NCB	2)	160.0	3.7	11.0	22.0	5.5	11.0	11.0	22.0
Heterotheca villosa (hairy false goldenaster)	NF	2)	640.0	14.7	drill 0.1 o	r broadcast	0.2 pounds	s PLS per a	cre with gra	ass mixture
<i>Iris missouriensis</i> (Rocky Mountain iris)	NCF		26.4	0.6					66.0	132.0
Juncus balticus (Baltic rush)	NCLS		3,000.0	68.9					0.6	1.2
Juncus longistylis (longstyle rush)	NCS		24,000.0	551.0			0.1	0.1	0.1	0.1
Juncus mertensianus (Merten's rush)	NCS		24,000.0	551.0					0.1	0.1
Juncus nodosus (knotted rush)	NCS		12,000.0	275.5					0.1	0.3
Juncus torreyi (Torry's rush)	NCS		12,000.0	275.5			0.1	0.1	0.1	0.3
Koelaria macrantha (prairie junegrass)	NCB	2)	2,315.0	53.1	1.0	2.0	0.5	1.0	1.0	2.0
Krascheninnikovia lanata (winterfat)	NSh	2) 4)	123.0	2.8	drill 0.5 o	r broadcast	1.0 pounds	s PLS per a	cre with gra	ass mixture
Leymus angustus (Altai wildrye)	NS		73.0	1.7	20.0	40.0	15.0	30.0	20.0	40.0
Leymus cinerius (basin wildrye)	NCB	2) 4)	130.0	3.0	10.0	20.0	5.0	10.0	10.0	20.0
Leymus racemosus (mammoth wildrye)	ICS		55.0	1.3	15.0	30.0	7.5	15.0	15.0	30.0
Leymus triticoides (beardless wildrye)	NCS	4)	150.0	3.4	12.0	24.0	6.0	12.0	12.0	24.0

Table 5. Graminoid, Forb and Shru	b See	ding R	ates for	Conser	vation P	lantings	within (	Colorado	)	
			Seeds per	Seeds per square				eeding Rat	,	
Genus species (common name - Cultivar)	Notes		pound (1,000s)	foot per pound planted		ated		rigated	Grassed \	Riparian, Naterways
Liatris punctata	NI) A / E	0)	62.0	per acre	drill 0.25 o	broadcast	drill	broadcast	drill	broadcast
(dotted gayfeather)	NWF	2)	63.0	1.4	01111 U.25 U	Dioaucas	t 0.5 pound	is PLS per a	acre with gr	ass mixture
Linum perenne (blue flax - Appar)	ICF	2)	285.0	6.5	drill 0.25 o	r broadcas	t 0.5 pound	ls PLS per a	acre with gr	ass mixture
Lolium arundinaceum (tall fescue - Alta)	ICB	2)	205.0	4.7	8.0	16.0	4.0	8.0	8.0	16.0
Lolium perenne (perennial ryegrass)	ICB	2)	247.0	5.7	8.0	16.0	4.0	8.0	8.0	16.0
Lonicera involucrata (twinberry honeysuckle)	NSh	2) 4)	327.0	7.5	drill 0.1 o	r broadcast	0.2 pounds	PLS per a	cre with gra	ss mixture
Lotus corniculatus (birdsfoot trefoil)	ICL	2) 3)	375.0	8.6	4.0	8.0	2.0	4.0	4.0	8.0
Lupinus argenteus (silvery lupine)	NCF	2) 5) 6)	2.3	0.1	drill 0.2 o	r broadcast	0.4 pounds	s PLS per a	cre with gra	ss mixture
Medicago sativa (alfalfa)	IL	2)	220.0	5.1	8.0	16.0	4.0	8.0	8.0	16.0
Melica spectabilis (purple oniongrass)	NCS		556.0	12.8	3.0	6.0	1.5	3.0	3.0	6.0
Melilotus officinalis (yellow sweetclover)	ICL	2)	260.0	6.0	7.0	14.0	3.5	7.0	7.0	14.0
Monarda fistulosa (wildbergamot beebalm)	NF	2) 4)	1,272.0	29.2	drill 0.05 c	or broadcast	t 0.1 pound	s PLS per a	cre with gra	ass mixture
Muhlenbergia asperifolia (alkali muhly)	NWS		2,400.0	55.1	0.8	1.6	0.4	0.8	0.8	1.6
Muhlenbergia montana (mountain muhly)	NCB	2)	1,500.0	34.4	1.2	2.4	0.6	1.2	1.2	2.4
Muhlenbergia pungens (sandhill muhly)	NWS		747.0	17.1	2.4	4.8	1.2	2.4	2.4	4.8
Muhlenbergia racemosa (marsh muhly)	NWS		1,608.0	36.9	1.0	2.0	0.5	1.0	1.0	2.0
Muhlenbergia wrightii (spike muhly)	NCB	2) 4)	1,600.0	36.7	1.0	2.0	0.5	1.0	1.0	2.0
Nassella viridula (green needlegrass)	NCB	2) 4) 5)	181.0	4.2	10.0	20.0	5.0	10.0	10.0	20.0
Oenothera caespitosa (tufted evening-primrose)	NCF	2)	1,300.0	29.8	drill 0.05 c	or broadcast	t 0.1 pound	s PLS per a	cre with gra	ass mixture
Onobrychis viciaefolia (sainfoin - Pod)	ICL	2) 3)	18.0	0.4	35.0	70.0	25.0	50.0	35.0	70.0
Onobrychis viciaefolia (sainfoin - Shelled)	ICL	2) 3)	30.0	0.7	25.0	50.0	20.0	40.0	25.0	50.0
Panicum obtusum (vinemesquite)	NWS		145.0	3.3	12.0	24.0	6.0	12.0	12.0	24.0
Panicum virgatum (switchgrass)	NWS	4) 5)	389.0	8.9	4.0	8.0	2.0	4.0	4.0	8.0
Pascopyrum smithii (western wheatgrass)	NCS		110.0	2.5	16.0	32.0	8.0	16.0	16.0	32.0

Table 5. Graminoid, Forb and Shru	ıb See	ding R	ates for	Conser	vation P	Plantings	within (	Colorado	)	
			Seeds per	Seeds per square				eeding Ratelive seed)	,	
Genus species (common name - Cultivar)	Notes		pound (1,000s)	pound planted	Irrig	ated	Nonir	rigated		Riparian, Waterways
Penstemon angustifolius				per acre	drill	broadcast	drill	broadcast	drill	broadcast
(narrow leaf penstemon)	NCF	2) 6)	313.0	7.2	6.0	12.0	2.8	6.0	6.0	12.0
Penstemon strictus (rocky mountain penstemon - Bandera)	NCF	2) 6)	286.0	6.6	6.0	12.0	3.0	6.0	6.0	12.0
Penstemon whippleanus (Whipple's penstemon)	NCF	2) 6)	800.0	18.4	2.0	4.0	1.0	2.0	2.0	4.0
Phalaris arundinacea (reed canarygrass)	NCS	5)	530.0	12.2	3.5	7.0	2.0	4.0	3.5	7.0
Phleum alpinum (alpine timothy)	NCS		1,000.0	23.0	2.0	4.0	1.0	2.0	2.0	4.0
Phleum pratense (timothy)	ICB	2)	1,230.0	28.2	2.0	4.0	1.0	2.0	2.0	4.0
Pleuraphis jamesii (galleta grass - caryopsis)	NWS		470.0	10.8	4.0	8.0	2.0	4.0	4.0	8.0
Pleuraphis jamesii (galleta grass - floret)	NWS		160.0	3.7	11.0	22.0	5.5	11.0	11.0	22.0
Poa alpina (alpine bluegrass)	NCS	4)	1,000.0	23.0	2.0	4.0	1.0	2.0	2.0	4.0
Poa compressa (Canada bluegrass)	ICS		2,500.0	57.4	1.0	2.0	0.5	1.0	1.0	2.0
Poa fendleriana (muttongrass)	NCB	2)	2,000.0	45.9	1.0	2.0	0.5	1.0	1.0	2.0
Poa palustris (fowl bluegrass)	NCS	2) 4)	1,900.0	43.6	1.0	2.0	0.5	1.0	1.0	2.0
Poa pratensis (Kentucky bluegrass)	ICS	4)	2,200.0	50.5	1.0	2.0	0.5	1.0	1.0	2.0
Poa secunda (big bluegrass)	NCB	2) 4)	880.0	20.2	2.0	4.0	1.0	2.0	2.0	4.0
Poa secunda (Canby/Sandberg bluegrass)	NCB		925.0	21.2	2.0	4.0	1.0	2.0	2.0	4.0
Prunus pumila besseyi (bessey sandcherry)	NSh	4) 5) 6)	4.0	0.1	drill 0.5 o	r broadcast	1.0 pounds	s PLS per a	cre with gra	ass mixture
<i>Prunus virginiana</i> (chokecherry)	NSh	4) 5) 6)	4.8	0.1	drill 0.5 o	r broadcast	1.0 pounds	s PLS per a	cre with gra	ass mixture
Psathyrostachys juncea (Russian wildrye)	ICB	2) 4)	170.0	3.9	10.0	20.0	5.0	10.0	10.0	20.0
Pseudorogneria spicata inermis (beardless wheatgrass)	NCB	2) 4) 5)	150.0	3.4	12.0	24.0	6.0	12.0	12.0	24.0
Pseudorogneria spicata spicata (bluebunch wheatgrass)	NCB	2)	140.0	3.2	12.0	24.0	6.0	12.0	12.0	24.0
Puccinellia nuttalliana (Nuttall's alkaligrass)	NCS		2,108.0	48.4					1.0	2.0
Purshia tridentata (antelope bitterbrush)	NSh	2) 4) 6)	15.4	0.4	drill 1.0 o	r broadcast	2.0 pounds	s PLS per a	cre with gra	ass mixture
Ratibida columnifera (upright prairie coneflower)	NWF	2) 5)	900.0	20.7	drill 0.2 o	r broadcast	0.4 pounds	s PLS per a	cre with gra	ass mixture

Table 5. Graminoid, Forb and Shru	b See	ding R	ates for	Conser	vation P	lantings	within (	Colorado	)									
			Seeds per	Seeds per square			Stand Se											
Genus species (common name - Cultivar)	Notes		pound (1,000s)	foot per pound planted	Irrig	ated	Nonir	rigated		Riparian, Vaterways								
				per acre	drill	broadcast	drill	broadcast	drill	broadcast								
Rhus trilobata (skunkbush sumac - cleaned seed)	NSh	2) 4) 5) 7)	20.0	0.5	drill 1.0 or	r broadcast	2.0 pounds	PLS per a	cre with gra	ss mixture								
Ribes aureum (golden currant)	NSh	2) 4) 7)	233.0	5.3	drill 0.5 o	r broadcast	1.0 pounds	PLS per a	cre with gra	ss mixture								
Ribes cereum (wax currant)	NSh	2) 4) 7)	251.0	5.8	drill 0.5 o	r broadcast	1.0 pounds	PLS per a	cre with gra	ss mixture								
Ribes montigenum (gooseberry currant)	NSh	2) 4) 7)	142.0	3.3	drill 0.5 or	r broadcast	1.0 pounds	PLS per a	cre with gra	ss mixture								
Rosa woodsii (woods rose)	NSh	2) 4) 7)	48.0	1.1	drill 0.5 or	r broadcast	1.0 pounds	PLS per a	cre with gra	ss mixture								
Rubus parviflorus (thimbleberry)	NSh	2) 7)	204.0	4.7	drill 0.5 or	r broadcast	1.0 pounds	PLS per a	cre with gra	ss mixture								
Sambucus nigra cerulea (blue elderberry)	NSh	2) 4) 7)	205.0	4.7	drill 0.5 or	ill 0.5 or broadcast 1.0 pounds PLS per acre with grass mixt												
Sanguisorba minor (small burnet)	NCF	2)	42.0	1.0	30.0	60.0	15.0	30.0	30.0	60.0								
Schizachyrium scoparium (little bluestem)	NWB	2) 4)	260.0	6.0	7.0	14.0	3.5	7.0	7.0	14.0								
Schoenoplectus acutus (hardstem bulrush)	NS		206.4	4.7					8.4	16.9								
Schoenoplectus maritimus (alkali bulrush)	NS		430.0	9.9					4.1	8.1								
Schoenoplectus pungens pungens (common threesquare)	NS		260.4	6.0					6.7	13.4								
Schoenoplectus tabernaemontani (softstem bulrush)	NS		550.0	12.6					3.2	6.3								
Scirpus microcarpus (small fruited bulrush)	NS		7,128.0	163.6					0.2	0.5								
Scirpus pallidus (pale bulrush)	NS		7,500.0	172.2					0.2	0.5								
Shepherdia argentea (silver buffaloberry)	NLSh	2) 4) 7)	41.0	0.9	drill 1.0 o	r broadcast	2.0 pounds	PLS per a	cre with gra	ss mixture								
Shepherdia canadensis (russet buffaloberry)	NLSh	2) 4) 7)	59.2	1.4	drill 1.0 o	r broadcast	2.0 pounds	PLS per a	cre with gra	ss mixture								
Sorghastrum nutans (yellow indiangrass)	NWS	4) 5)	170.0	3.9	10.0	20.0	5.0	10.0	10.0	20.0								
Sparganium eurycarpum (giant bur-reed)	NS		22.7	0.5					76.8	153.5								
Spartina pectinata (prairie cordgrass)	NWS		110.0	2.5	7.0	14.0	5.0	10.0	7.0	14.0								
Sphaeralcea coccinea (scarlet globemallow)	NF	2)	500.0	11.5	drill 0.2 or	r broadcast	0.4 pounds	PLS per a	cre with gra	ss mixture								
Sporobolus airoides (alkali sacaton)	NWB	2)	1,700.0	39.0	1.5	3.0	1.0	2.0	1.5	3.0								
Sporobolus cryptandrus (sand dropseed)	NWB	2)	5,298.0	121.6	0.5	1.0	0.3	0.6	0.5	1.0								

Table 5. Graminoid, Forb and Shrub Seeding Rates for Conservation Plantings within Colorado

,		- 3				Solid Stand Seeding Rates 1)												
Convo anacias			Seeds per	Seeds per square				eeding Rat live seed)	,									
Genus species (common name - Cultivar)	Notes		pound (1,000s)	foot per pound planted	Irrig	ated	Nonir	rigated		Riparian, Waterways								
				per acre	drill	broadcast	drill	broadcast	drill	broadcast								
Symphoricarpus albus (common snowberry)	NCSh	2) 4) 5) 7)	76.0	1.7	drill 0.5 or broadcast 1.0 pounds PLS per acre with grass mixtu													
Symphoricarpus occidentalis (western snowberry)	NCSh	2) 4) 7)	74.4	1.7														
Symphoricarpus oreophilus (mountain snowberry)	NCSh	2) 4) 6) 7)	54.0	1.2														
Thinopyrum intermedium (intermediate wheatgrass)	ICS		88.0	2.0	15.0	30.0	10.0	20.0	15.0	30.0								
Thinopyrum intermedium (pubescent wheatgrass)	ICS		100.0	2.3	14.0	28.0	9.0	18.0	14.0	28.0								
Thinopyrum ponticum (tall wheatgrass)	ICB	2) 4) 5)	78.0	1.8	17.0	34.0	11.0	22.0	17.0	34.0								
Trifolium fragiferum (strawberry clover)	IL	2) 3)	300.0	6.9	6.0	12.0	3.0	6.0	6.0	12.0								
Trifolium hybridum (alsike clover)	IL	2) 3)	700.0	16.1	4.0	8.0	2.0	4.0	4.0	8.0								
Trifolium pratense (red clover)	IL	2) 3)	275.0	6.3	6.0	12.0	3.0	6.0	6.0	12.0								
Trifolium repens (white clover)	IL	2) 3) 4) 5)	825.0	18.9	4.0	8.0	2.0	4.0	4.0	8.0								
Vicia americana (American vetch)	NCL	2)	33.0	0.8	drill 3.0 o	r broadcast	6.0 pounds	s PLS per a	cre with gra	ass mixture								

Notes: I = introduced; N = native; C = cool season; W = warm season; B = bunchgrass; S = sodformer; F = forb; L = legume; Sh = shrub; V = vine; 1) Seeding rates for extremely small (greater than 825,000 seeds/pound) or extremely large (less than 100,000 seeds/pound) have been adjusted based on past establishment data; 2) Mix with adapted sodformers; 3) Inoculate seed with appropriate rhizobium before planting; 4) Stratification recommended; 5) Scarification recommended; 6) Plant unstratified/unscarified seed in late fall; 7) Plant separately or in rows alternating with grasses to decrease competition.

References: USDA NRCS. 2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA 70874-4490 USA; Thornburg, Ashley A. 1982. Plant materials for use on surface-mined lands in arid and semiarid regions. USDA SCS-TP-157. 88 pp.; Wasser, C.H. 1982. Ecology and culture of selected species useful in revegetating disturbed lands in the west. USDI FWS. FWS/OBS-82/56. 347 pp.; Hassell, W. and W. R. Beavers. 1996. Seeding rate statistics for native and introduced species. USDI NPS, USDA NRCS. Lakewood, CO. 25 pp.; Colorado Agronomy Technical Note No. 61. Seeding rates. 1981. USDA NRCS. Lakewood, CO.

																					So	ils and	Lan	ndscap	e Posi	tion	1)		Su	ıitabi	ility Ra	itings	3)		Π	Cons	ervati	on Pla	antings	s
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	uitabilit	y for C	onserv	ation F	Planting	s by M	lajor L	and	Resc	ourc	e Area	as with	nin Co	lora	ado				Upla	ınds		Low	lands	′													<u>.</u>
					Min.	Max.	Min FFP			Soil				Majo	r Land	Resour	ce A	ırea				pes 5%		opes 15%	Saline Alkaline	Non-Saline	Alkaline	Jor	Tolerance	Tolerance	Tolerance	Φ	ance	ם ביי		Trap Strips	iterways	Hayland		Mgmt - Nonirr. Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	34A	D 34B D 35	D 36	E 47 E 48A	E 48B	E 51	G 67B north	G 67B south	H 70A	H 77A	s	Soil Te		es L C	Moist	Moist		Seedling Vigor	bic.	CaCO3 Tole	Drought Tole Fire Toleran	Salinity Toler	Shade Tolerance Fertility requirement	Water use	Area	Cross Wind Filter Strips	sed	Pasture and Range	Riparian Areas	Soil Salinity Mgm't Wastewater Trtm't
Abies lasiocarpa (subalpine fir)	NT		110 ft	FACU	20	40	70	8,400	12,000	4.0-6.	1=			X			, ,						Х	Х				2 2			2 2			и м						
Acer glabrum (rocky mountain maple)	NT	5)	15 ft	FAC	12	25	80	5,000	10,500	5.8-7.	5		х	хх	х	X							Х	х		Х	х	2 2	2 3	3	3 5	1	3 N	1 L					х	
Acer negundo (boxelder)	NT	5) 6)	25 ft	FACW	15	60	100	4,500	7,600	5.2-7.0	0 X	x x	X	х	X	X	< x		)	<			Х	х		Х	х	2 2	2 3	5	3 2	2	3 1	им					х	
Achillea millefolium occidentalis (western yarrow)	NF	8)	3 ft		8	26	70	4,000	12,000	6.0-8.0	0 X	x x	X	хх	x x	X	( X	x					х	Х			х	5 5	5 1	3	3 5	2	3 L	L M	Х			х	Ш	
Achnatherum hymenoides (Indian ricegrass - Nezpar)	NCB	8)	18 in	FACU	8	16	80	4,000	9,500	6.6-8.6	6 X	x x	×	хх	x x	X					x 2	x	Х	Х			х	4 2	2 1	5	5 5	2	1 L	- L	X			x x	Ш	
Achnatherum hymenoides (Indian ricegrass - Paloma, Rimrock)	NCB	8)	18 in	FACU	8	16	90	4,000	9,500	6.6-8.6	6 X	x x	×	хх	x x	X	( X	xx	X	⟨ X	x 2	x	Х	Х			х	4 2	2 1	5	5 5	2	1 L	- L	Х			x x		
Agropyron cristatum (crested wheatgrass - Ephraim)	ICB	8)	20 in		10	25	90	3,600	9,400	6.0-8.	5 X	x x	×	хх	x x	x >	( X	Х	)	(	)	x x		хх			х	5 3	3 1	5	5 3	2	1 N	И L	х		х	х	Ш	
Agropyron cristatum X desertorum (crested wheatgrass - Hycrest)	ICB	8)	24 in		8	25	90	3,600	9,400	6.0-8.	5 X	x x	×	хх	x x	X	( X	Х	)	<				Х			Х	5 3	3 1	5	5 5	2	1 N	и м	х		х	х		
Agropyron desertorum (crested wheatgrass - Nordan)	ICB	8)	24 in		8	24	90	3,600	9,400	6.0-8.	5 X	x x	×	Х		X >	( X	xx	X	< x			Х	хх			х	5 3	3 1	5	5 5	2	1 N	и м	х			х	Ш	
Agropyron fragile (Siberian wheatgrass - Vavilov, P-27)	ICB	8)	20 in		10	24	90	3,600	9,400	5.6-9.0	0 X		х	хх	x x	X							Х	х			Х	4 2	2 1	5	5 5	2	1 L	L M	Х		х	х		
Agrostis gigantea (redtop)	ICS	5) 7) 10)	24 in	FACW	16	60	90			4.5-7.	5 X	x x	X	хх	x x	X								Х		х		4 3	3 5	2	3 2	2	3 N	ИМ	Х	Х	х	х	х	
Agrostis scabra (ticklegrass)	NCB	8) 10)	30 in	FAC	14	60	70	4,000	12,000	6.0-8.0	0 X	x x	X	x x	x x	x >	( X	X						хх				3 2	2 2	2	2 3	2	1 L	L M	$\coprod$			x x	$\coprod$	$\perp \! \! \perp$
Agrostis stolonifera (creeping bentgrass)	ICS	5) 10)	12 in	FACW	18	60	90	3,600	9,500	5.5-7.0	0 X	x x	X	хх	x x	X	( X	X	)	<			Х	Х		х		3 2	2 5	1	2 3	1	1 F	1 H	$\coprod$	$\perp$			X 2	х
Alnus incana tenuifolia (thinleaf alder)	NLT	5) 6)	30 ft	FACW	12	20	90	5,000	10,000	5.5-7.0	0	x x	X	Х	x x	X							Х	Х		х		3 3	3 5	1	2 3	2	3 N	1 H	$\coprod$				X Z	х
Alopecurus alpinus (alpine foxtail)	NCS	4) 5)	12 in	FACW	10	24	70	8,500	12,800	5.0-7.	5		Х	хх	х	X					x 2	x x	Х	хх	Х	х		3 3	3 5	3	2 1	3	3 N	1 H	$\coprod$	$\perp$		x x	x 2	х
Alopecurus arundinaceus (creeping meadow foxtail - Garrison)	ICS	4) 5) 7) 10)	36 in		18	60	90			5.6-8.4	4 X	x x	X	хх	x x	X	( X	xx	X	< x				хх	Х	х		2 5	5 5	5	2 5	3	1 F	1 H	$\coprod$		х	х	X Z	Х
Alopecurus pratensis (meadow foxtail)	ICS	5) 10)	36 in	FACW	20	60	90			5.8-8.0	0 X	x x	X	хх	x x	X			)	<				Х		х		5 3	3 3	5	2 3	2	1 F	1 H	$\coprod$	$\perp$		x	X 2	Х
Amelanchier alnifolia (Saskatoon serviceberry)	NCSh		15 ft	FACU	12	30	90	5,000	10,900	5.6-8.4	4 X	x	X	x x	x	X	<						Х	x x			Х	5 3	3 1	5	3 5	1	3 N	ИМ	Х			Х		

																					S	oils a	nd La	ndscap	e Pos	ition	1)		Su	iitabi	lity Ra	tings 3	3)			Cons	ervati	on Pla	antings	$\neg$
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	uitabili	ty for C	onserv	ation F	Planting	s by M	lajor L	and	Reso	urce	Area	s witl	nin Co	olora	ado				Up	lands		Low	lands	,												ir.	<b>7</b> 0
					Min.	Max.	Min FFP			Soil				Major	· Land	Resou	rce A	ırea				lopes 15%		lopes 15%	Saline	Non-Saline	Alkaline	Jor	Tolerance	Tolerance	Tolerance	rence	ance	: : : :		I rap Strips	terways	Hayland	as Mgm't - Nonirr.	0)
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip inches	32	Min. Elev	Max Elev	pH Range	34A	D 34B D 35	D 36	E 47 E 48A	48B	E 51	67B north	G 67B south	H 70A	H 72	S		Textu	res L C	Aoist	Moist		Seedling Vigor	bic	CaCO3 Tole	ە ا ـــ	Salinity Toler	Shade Tolerance Fertility requirement	Vater use	Critical Areas	Cross Wind Trap Filter Strips	sed	Pasture and Range	Riparian Areas Soil Salinity Mgm't	Vastewater
Amelanchier utahensis (Utah serviceberry)	NCSh		10 ft		12	45	90	5,000	9,500	5.6-8.4					ХУ		9 0	0 0	) I	<u> </u>				x x	2 [	1 2		4 2	Ť		3 4		3 L					X	LE 0	>
Amorpha canescens (leadplant)	NLSh		48 in		20	45	100	3,500	7,600	5.5-8.0	)				>	(	X	( x )	κ x	хх	(		Х				х	3 2	2 1	5	5 5	2	5 L	- L				х		
Andropogon gerardii (big bluestem - Bison, Champ, Kaw)	NWS	10)	48 in	FAC	16	35	100	3,400	9,500	6.0-8.0	)			х	>	(	х	( x )	< x	x x	×	х	х	Х	x z	x x	х	3 3	3 3	5	5 5	3	1 H	1 L	х	х	х	x x		х
Andropogon hallii (sand bluestem - Elida, Garden)	NWS		48 in		14	30	120	3,500	5,200	5.6-8.4	1				>		х	( x )	< x	х	X	Х	Х	Х			х	4 4	1 1	2	5 5	1	1 H	1 L	х			хх		
Andropogon hallii (sand bluestem - Woodward)	NWS		48 in		14	30	120	3,500	5,200	5.6-8.4	1								х	хх	X	Х	Х	Х			х	4 4	1 1	2	5 5	1	1 H	1 L	х			x x		
Artemisia frigida (fringed sagebrush)	NCSh		24 in		10	40	90	4,000	10,000	7.0-9.0	X	хх	x	хх	х	X	x x	(		Х			Х	хх	)	×	х	5 3	3 2	5	5 3	3	3 L	. L	Х			х		
Artemisia ludoviciana (Louisiana sage - Summit)	NCSF	10)	24 in	FACU	10	60	70	3,500	11,300	5.6-9.0	X	хх	x	хх	XX	X	x x	( x )	< x	х	X	Х	Х	Х			х	4 3	3 1	5	5 3	2	1 L	- L	Х			x x	Ш	
Artemisia tridentata vaseyana (mountain big sagebrush - Hobble Creek)	NSh		48 in		8	18	90	5,500	10,100	6.0-8.5	5 X	x x	x	хх	х	X								Х			х	3 3	3 1	5	3 2	2	1 L	_ M	Х			х		
Astragalas cicer (cicer milkvetch - Lutana, Monarch)	ISL	4) 5) 10)	36 in		14	60	90			6.0-8.4	1 X	x x	x	хх	х	X X	x x	( x )	< x	х	(	Х		Х	X Z	x x	х	2 4	1 3	5	3 5	3	1 L	_ M	Х	Х		х	х	
Atriplex canescens (fourwing saltbush - Rincon)	NSh		48 in	FACU	5	18	90	3,900	8,600	6.5-9.5	5 X	x x	х	хх	х	X X	x x	( x )	< x	х	(			хх	)	×	х	5 2	2 1	5	5 2	5	1 L	_ M	х			Х		
Betula nana (bog birch)	NSh	6)	36 in	OBL	14	30	80	5,700	11,400	4.9-6.5	5			х	х	(												2 2	2 3	2	3 3	1	3 L	_ L	Ш				х	
Betula occidentalis (water birch)	NT	5) 6)	25 ft	FACW	16	50	100	5,000	9,500	5.5-7.0	)		х	хх	х	X	х	( )	<							Х		3 2	2 5	2	2 5	2	3 M	1 H					x x	
Blepharoneuron tricholepis (pine dropseed)	NCB	8)	24 in		6	18	70	4,900	12,000	6.0-8.0	)	Х	х	хх	X X	X							х	Х			х	2 2	2 2	3	3 5	2	3 L	_ L				х		Ш
Bothriochloa ischaemum (yellow bluestem - Granada)	IWB	8)	24 in		15	30	160			5.0-8.5	5							X X	< x	хх	(			Х				3 2	2 1	5	5 5	2	1 M	ИМ	Х			х		
Bouteloua curtipendula (sideoats grama - Butte)	NWB	8) 9)	15 in		12	25	120	3,500	7,500	5.3-7.8	3				<b>\</b>		х	( x )	<			X >	(	хх			х	5 3	3 1	5	3 5	2	1 M	ИМ	х		х	x x		
Bouteloua curtipendula (sideoats grama - El Reno, Niner)	NWB	8) 9)	15 in		12	25	140	3,500	7,500	5.3-7.8	3	Х	х				х	( x )	< x	хх	(	X >	(	хх			х	5 3	3 1	5	3 5	2	1 M	ИМ	Х		х	x x		
Bouteloua curtipendula (sideoats grama - Vaughn)	NWB	8) 9)	15 in		12	25	100	3,500	7,500	5.3-7.8	3	Х	х		>	X	х	( x )	< x	хх	(	X >	(	хх			х	5 3	3 1	5	3 5	2	1 M	ИМ	Х		х	x x		
Bouteloua gracilis (blue grama - Hachita)	NWB	8) 9)	10 in		12	22	90	3,500	10,500	6.6-8.4	1 X	x x	х	x x	XX	( X	x x	( x )	< x	х	X	X	< x	х			х	3 2	2 1	5	5 3	2	1 L	_ L	Х		х	x x		

																						Soi	ils an	d Lan	dscap	e Posi	tion	1)		S	uitab	ility Ra	atings	3)		$\top$	Со	nserv	ation	Plan	tings
Table 6. Perennial Graminoid, Forb	and V	loody F	Plant S	uitabili	ty for C	onser	ation F	Planting	gs by M	lajor L	and	Resc	urce	e Are	as wi	ithin	Colo	rado	)				Upl	ands		Low	lands	,													ii.
					Min.	Max.	Min FFP			Soil				Majo	or Land	d Res	source	Area				Slop > 1			opes 15%	Saline	Non-Saline	Alkaline	Jor	Tolerance	Tolerance	Tolerance	rence	ance	irement	s	Trap Strips	terways	Hayland		Kiparian Areas Soil Salinity Mgm't - Nonirr. Wastewater Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	34A	D 34B D 35	D 36	E 47 E 48A	E 48B	E 49	3 67A	G 67B north	G 69	H 70A H 72	477A	s ı	Soil T	exture	es L C	Moist	Moist		Seedling Vigor	bio S		Drought Tole Fire Toleran	Salinity Tolerer	Shade Tolerance	Fertility requirement	Water use Critical Area	Cross Wind	Filter Strips Grassed Wa	1 6	Range	Riparian Areas Soil Salinity Mgm't - Wastewater Trtm't S
Bouteloua gracilis (blue grama - Alma)	NWB	8) 9)	10 in		12	22	90	3,500	10,500	6.6-8.4	1						x x		x x	x x	X	x >	x x	х	хх				3 2		5	5 3		1	L	L X	Ť		x x	X	
Bouteloua gracilis (blue grama - Lovington)	NWB	8) 9)	10 in		12	22	120	3,500	10,500	6.6-8.4	1					х	х	X .	хх	х	X	X X	x x	х	хх			х	3 2	2 1	5	5 3	2	1	L	L X		×	Х	х	
Bromus anomalus (nodding brome)	NCB	8)	24 in		10	20	70	5,300	11,500	5.4-7.9	x	хх	Х	x x	X	x >	x					x >	x	х	х			Х	5 3	3 1	3	5 3	2	5	L	L			x	х	
Bromus biebersteinii (meadow brome - Regar, Fleet, Paddock)	ICB	8) 10)	30 in		16	30	100			5.6-8.4	¥ X	хх	х	х	X	X >	x x	X	х	X	(				Х			х	5 3	3 2	2	3 5	2	1	н	мх			х		
Bromus inermis (smooth brome - Lincoln)	ICS	10)	30 in		14	40	120	4,500	10,000	5.5-8.0	×	хх	х	x x	: x	X >	x x	X	хх	x x	X	X X	x x	х	хх		Х	х	4 5	5 3	3	3 3	2	1	н	м х		x x	. X		X
Bromus inermis (smooth brome - Manchar)	ICS	10)	30 in		14	40	90	4,500	10,000	5.5-8.0	X	хх	х	x x	X	ХХ	x					X X	x x	х	хх		Х	х	4 5	5 3	3	3 3	2	1	н	м х		x x	. X		X
Bromus marginatus (mountain brome - Bromar, Garnet)	NCB	8) 10)	36 in		18	60	90	5,000	10,100	5.5-8.0	X	хх	х	хх	X	X X	x					)	x x		хх			х	5 2	2 1	5	5 3	2	1	М	мх			Х	х	
Buchloe dactyloides (buffalograss - Mesa, Sharps, Texoka, Codie, Bowie)	NWS		4 in	UPL	10	24	140	3,500	6,000	6.5-8.0	)					Х	x	X	x x	x	X	)	x x		x x			х	2 5	5 1	5	5 5	2	3	М	L		×	x x	х	
Calamagrostis canadensis (bluejoint reedgrass)	NCS	6)	36 in	OBL	14	65	70	5,100	12,000	4.5-8.0	)	x x	Х	X	X	x >	x x	х											3 3	3 5	3	2 2	2	1	М	М				;	х
Calimovilfa longifolia (prairie sandreed - Goshen, Pronghorn)	NWS	10)	36 in		12	28	110	3,500	9,800	5.6-8.4	1					х	Х	X	хх	x x	X	x >	×	х	Х			х	3 5	5 1	5	5 3	1	1	н	LX		×	x x	х	
Callirhoe involucrata (purple poppymallow)	NF	8)	12 in		10	36	100	3,400	6,000	5.5-7.5	5					Х	Х	X	хх	x x	X			х	Х			х	3 3	3 1	3	3 2	2	1	М	мх				х	
Caltha leptosepala (marsh marigold)	NF	6) 8)	12 in	OBL	16	40	70	8,000	14,000	6.6-8.2	2		х	X	X	X X	x												2 2	2 3	3	1 3	1	1	М	н	Ш				х
Caragana arborescens (Siberian peashrub)	ILSh		6 ft		12	55	90			5.0-8.5	5 X	хх	х	x x	: x	X X	x x	X	хх	x x	X			х	х	)	<	х	3 1	1 2	5	5 1	3	3	LI	м х					
Carex aquatilis (water sedge)	NB	6) 8)	24 in	OBL	15	65	70	5,000	13,000	4.0-7.5	5 X	Х	х	x x	x	x >	x x	Х				$\perp$							3 2	2 5	5	2 2	1	1	М	н			$\perp \downarrow$	;	х
Carex canescens (silvery sedge)	NB	6) 8)	24 in	OBL	14	40	70	7,700	11,500	5.0-7.2	2		х	x x	x	X X	x												2 2	2 5	2	1 5	1	3	L	н			Ш		х
Carex douglasii (Douglas' sedge)	NS	4) 5)	18 in	FAC	14	24	80	4,500	10,500	6.0-8.5	5	Х	х	хх	X	X X	x									X X	x x	х	2 3	3 3	3	3 5	3	1	L	М	Ш	х	Ш	x 2	х
Carex filifolia (threadleaf sedge)	NB	8)	12 in		8	24	70	4,500	13,000	5.2-7.5	5		х	х	X	Х	Х	Х		X				х	Х			х	2 2	2 1	3	3 5	1	3	L	L			Ш	Х	
Carex geyeri (elk sedge)	NS		12 in		12	20	80	6,000	11,000	6.0-7.7	7 X	x x	х	x x	x	x x	x					X	×	х	Х			х	2 2	2 1	3	5 5	1	3	L	L				Х	

																					So	oils ar	d Lar	ndscap	e Posi	tion 1	1)		Sui	tabili	ty Rat	tings 3	3)	$\neg$	(	Conse	ervatio	on Pla	antings	$\neg$
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	Suitabilit	y for C	Conserv	ation F	Planting	s by M	lajor L	and	Reso	urce	Area	s with	in Co	lora	do				Upl	ands		Low	ands	1										П		ji.	
					Min.	Max.	Min FFP			Soil				Major	Land F	Resourc	ce Ar	ea				opes 15%		opes 15%	Saline Alkaline	Non-Saline	Alkaline	jor	Tolerance	Tolerance	rance	rence	ance		s Trap Strips		terways Havland	רומאומוזע	as Mgm't - Nonirr.	Wastewater Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	34A	D 34B D 35	D 36	4/ 48A	48B 49	51 67A	G 67B north	G 67B south G 69	H 70A	77 A	s	Soil T		es L C	Moist	Moist	1	Seedling Vigor	bic	CaCO3 Tole	_   0	Salinity Tolerence	Shade Tolerance Fertility requirement	Water use	Critical Areas Cross Wind Trap	Filter Strips	Grassed Wa	Range	Riparian Areas Soil Salinity Mgm't	Vastewater
Carex microptera (smallwing sedge)	NB	5) 8)	16 in	FAC	10	24	80	8,700	11,000	5.6-7.4				Х	ХХ		9	0 0	<u> </u>	I I			0		2 (	X		2 2		3	1 5		1 L	. H	0 0	) Ш	0 1	. 12	X X	
Carex nebrascensis (Nebraska sedge)	NS	6)	24 in	OBL	14	32	80	3,500	10,800	5.7-7.4	4 X	хх	x :	x x	хх	хх	X	x x	x 2	x x								2 3	5	3	1 5	3	1 L	. н					х	
Carex praegracilis (clustered field sedge)	NS	5) 6)	24 in	FACW	10	24	80	3,300	10,600	5.3-6.8	3 X	хх	x :	x x	хх	х	X	x	x 2	x x						Х		2 2	5	3 2	2 5	1	3 L	. М					х	
Carex simulata (slender sedge)	NS	4) 5) 6)	18 in	FACW	8	24	85	6,200	10,000	6.0-7.5	5			х	Х										х	х		2 3	5	3 2	2 5	3	3 M	1 Н			Ш		x x	
Carex stipata (awl fruited sedge)	NB	6) 8)	40 in	OBL	12	50	80	4,800	8,000	4.9-7.9	9				Х													2 2	5	3 2	2 5	2	5 M	1 M	$\perp$				х	
Carex utriculata (beaked sedge)	NS	6)	42 in	OBL	18	60	70	6,500	11,000	5.7-7.7	7			х	х													2 5	5	2 2	2 5	2	1 M	I H	1				х	
Carex vulpinoidea (fox sedge)	NB	6) 8)	38 in	OBL	12	65	110	5,000	5,600	6.8-8.9	9				×													3 3	3	3 2	2 2	1 :	3 M	1 M	$\perp$				X	
Celtis occidentalis (hackberry)	NT	5)	26 ft	FACU	14	60	90	3,500	7,200	6.0-7.8	3		х		х				,	x x			х	хх		Х	х	3 3	3	3 ;	3 5	1 :	3 M	í L	1		Ш		x	
Cercocarpus ledifolius (curlleaf mountain mahogany)	NSh		10 ft		11	19	90	5,600	9,000	6.0-9.0	)	Х		х									х	хх			Х	2 2	1	5 :	5 5	1 :	3 L	L	$\perp$	$\perp \! \! \perp$	Ш	Х	Ш	Ш
Cercocarpus montanus (true mountain mahogany - Montane)	NSh		6 ft		10	25	90	4,000	10,000	6.0-8.0	X	хх	x :	x x	x x	x x	(						х	Х			Х	3 2	1	5 !	5 5	1 :	3 L	. L	Х		Ш	Х	Ш	
Chrysothamnus viscidiflorus (douglas rabbitbrush)	NSh		36 in		7	24	90	5,600	10,500	7.0-8.5	5 X	хх		x x	x x	х							х	хх			Х	3 5	2	5 :	5 1	2	1 L	. L	Х	$\perp \! \! \perp$	Ш	Х	$\sqcup$	Ш
Colutea arborescens (bladder senna)	ILSh		8 ft		16	45	90	3,900	6,800	6.0-8.5	5 X		x .	x x	хх	×	X	Х	X Z	x x			х	хх			х	3 2	1	5 !	5 3	2	3 M	1 M	Х				$\perp \perp$	$\downarrow \downarrow$
Cornus sericea sericea (redosier dogwood)	NSh	4) 5)	10 ft	FACW	16	60	90	4,500	10,000	7.0-8.0	X		x :	x x	хх	ХХ	X						х	Х	ХХ	X	х	3 2	5	3 2	2 2	3	1 L	Н	$\downarrow$				x x	Ш
Crateagus douglasii (black hawthorn - River)	NT	5)	15 ft	FAC	14	125	100	5,500	8,500	6.5-7.5	5 X	Х	x :	x x	хх	Х							х	х		Х		5 3	3	2 2	2 5	1 :	3 L	Н	$\downarrow$				x x	
Dactylis glomerata (orchardgrass - Latar, Paiute)	ICB	8) 10)	36 in	FACU	18	60	90	4,500	10,500	5.5-8.0	X	хх	x :	x x	хх	X	X	x x	X 2	x x				Х		Х	Х	4 2	3	5	3 3	2	3 H	НМ	Х	Х	<u> </u> ,		$\sqcup$	X
Dalea purpurea (purple prairieclover)	NWL	8)	24 in		12	20	120	3,500	7,700	5.6-8.4	1				Х	X	X	x x	X 2	x x	х	x x	х	хх	X		х	3 3	1	3 3	3 2	3	3 L	L	х			X		
Dasiphora floribunda (shrubby cinquefoil)	NSh	4) 5)	30 in	FACW	16	20	70	5,400	12,100	6.0-8.0	) X		x 2	x x	хх	X							х	хх	ХХ	X	Х	2 3	3	3 :	3 2	3	3 M	L	4			Х	х	$\perp \downarrow$
Deschampsia caespitosa (tufted hairgrass - Peru Creek)	NCB	5) 8)	36 in	FACW	16	60	70	5,200	14,000	5.5-7.5	5		X Z	x x	x x	Х						х		x x		Х		2 2	5	3 2	2 5	1	1 M	1 Н	$\perp$		>	x x	x x	

																						Soil	s and I	and	scape	Posit	ion 1	1)		Suit	ability	y Rat	ings 3	;)			Cons	ervat	ion Pl	antings	s
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	uitabilit	y for C	Conserv	vation I	Planting	s by M	1ajor L	anc	Res	ourc	e Are	as w	/ithin	Colc	rado	)				Uplan	ds		Lowl	ands	,					П								
					Min.	Max.	Min FFP			Soil				Majo	or Lar	nd Re	source	Area	<u></u>			Slop > 15		Slop < 15	es 5%	Saline Alkaline	Non-Saline	Alkaline	Jor.	Tolerance	erance	rance	Tolerence	arice	i		Trap Strips	aterways	Hayland	sas	Soil Salinity Mgm't - Nonirr. Wastewater Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip inches	Precip	32	Min. Elev	Max Elev	pH Range	D 34A	D 34B	D 36				E 51 G 67A	G 67B north	G 67B south	H 70A H 72	H 77A		oil Tex	tures	С	Moist	Moist	Dry Dry	Seediiiig vigor Rate of Spread	Anerobic To	CaCO3 Tolerance Drought Tolerance	Fire Toleran	Salinity Tolerer Shade Toleran	Snade Tolerance Fertility requirement	Water use	Critical Areas	Cross Wind Trap Filter Strips	. ≥	Pasture and Range	Riparian Areas	Soll Salmity Wastewater
Distichlis spicata (inland saltgrass)	NWS	4) 5) 7) 10)	14 in	FACW	12	70	80	3,500	9,000	6.4-10	╅▔						x x		x x	x x				Х	х	x x		X 2			5 3				1 M		Х		x x		
Eliocharis palustris (common spikerush)	NCLS	6)	15 in	OBL	16	60	90	3,400	10,700	4.0-8.	0 X	x x	< x	x >	×	Х	хх	X	хх	хх	х							3	3 5	5	3 2	3	2 3	3 M	Н					х	
Elymus canadensis (Canada wildrye)	NCB	4) 5) 8) 10)	36 in	FACU	12	45	90	3,500	9,000	5.0-7.	9 X	х	Х	X	×	х	хх	X Z	x x	хх	х			x x	х	Х	х	ţ	5 3	3	5 2	2	3 5	5 M	1 M				хх	Х	
Elymus elymoides (bottlebrush squirreltail - Tusas)	NCB	8)	18 in		8	16	70	4,000	11,300	6.0-8.	4 X	x	< x	X	( x	Х	хх	X	хх	x x	х			x x	х	X		x s	3 2	1	5 5	3	3 1	1 L	L	х			x x		
Elymus hoffmannii (hybrid wheatgrass - Newhy)	ICS	10)	36 in		13	35	90	4,500	9,500	6.6-8.	4 X	x >	< x	X	( x	Х	х	<b>X</b>	хх	хх	х		]	x x	Х	x x	X	x s	3 3	3	5 3	2	4	1 M	1 M	х	х	Ш	х	Ш	
Elymus lanceolatus lanceolatus (thickspike wheatgrass - Critana)	NCS		20 in	UPL	10	25	90	4,800	10,000	5.5-8.	0 X	x x	< x	X	X	Х	хх	X :	х	Х		x x	x 2	х	х	Х		X 4	4 3	2	3 5	5	3 3	3 M	1 L	х		X	хх		
Elymus lanceolatus psammophilus (streambank wheatgrass - Sodar)	NCS		15 in		12	25	90	5,400	9,500	6.6-8.	4 X		Х	X	X	Х	Х					x x	x 2	x x	х	Х		X	4 4	2	3 5	5 5	3 3	3 M	L	х		х	хх		
Elymus trachycaulus (slender wheatgrass - Pryor, San Luis)	NCB	8) 10)	30 in	FACU	14	25	90	4,600	12,000	5.6-9.	0 X		Х	X >	( X	Х	Х					x x	]	x x		Х		X 4	4 2	2	3 4	5	3 3	3 M	1 L	Х	$\perp$		хх		
Elymus wawawaiensis (Snake River wheatgrass - Secar)	NCB	8)	24 in	UPL	10	35	90	5,000	9,500	6.6-8.	4 X	x 2	< x	х										x x	х			x 3	3 2	1	5 5	2	2 1	1 L	L	х	$\perp$	Ш	хх		
Ephedra viridis (green ephedra)	NSh		36 in		6	12	140	4,500	9,000	7.0-8.	0	x x	< x										]	x x				X 2	2 3	1	5 5	5	2 3	3 M	L		$\perp$		X		
Eragrostis trichodes (sand lovegrass - Nebraska 27)	NWB	8)	40 in		16	35	120	3,900	7,000	5.0-7.	8					х	Х			Х	х			X				X 5	5 3	2	5 5	2	1 1	1 L	. М	х	$\perp$	Ш	хх		
Ericameria nauseosa (rubber rabbitbrush)	NSh		48 in		6	20	90	4,600	9,000	6.0-8.	0 X	x x	< x	X	X	Х	хх	X Z	хх	хх	х			Х	х	Х		X 5	5 3	2	4 5	3	3 1	1 L	. М	х			Х		
Eriogonum umbellatum (sulphur-flower buckwheat)	NF	8)	12 in		8	18	70	5,000	10,500	6.5-9.	0 X	x >	⟨ x	X	X	Х	Х						]	x x		Х		X 3	3 2	1	5 5	2	5 1	1 L	L	х		Ш	Х		
Falugia paradoxa (Apacheplume)	NSh		6 ft		10	20	120	4,500	8,500	7.0-8.	0	,	<			Х	Х							х				X 5	5 3	1	5 5	2	2 1	1 L	. L	х			Х		
Festuca arizonica (arizona fescue - Redondo)	NCB	8)	24 in		14	20	70	6,500	11,600	6.3-7.	7 X		Х	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	X	х						x x	]	x x				x 3	3 2	1	5 3	2	1 1	1 L	L	х		Ш	хх	Ш	
Festuca idahoensis (Idaho fescue)	NCB	8)	24 in		16	20	90	7,000	10,000	5.6-8.	4 X		Х	X	X	х						×	Х	Х	х			3	3 2	2	5 2	3	1 3	3 L	. М	х		Ш	хх		
Festuca ovina (sheep fescue - Covar)	NCB	8)	6 in		10	20	70	6,500	14,000	5.5-8.	0 X	х	Х	X	( x	Х	Х					x x	x 2	х	х			x 3	3 3	1	1 5	3	1 1	1 M	1 L	х			x x		
Festuca rubra (red fescue)	ICS	5)	24 in	FAC	18	70	70	7,000	11,200	5.0-7.	5				X							x x	x   :	x x	Х		х	x 3	3 5	3	5 3	5	2	1 H	М	х	х			X	x

																						So	oils a	nd La	ndscap	oe Pos	ition	1)		S	uitab	ility Ra	tings	3)		T	Con	serva	tion P	lantin	js
Table 6. Perennial Graminoid, Fort	and V	Voody F	Plant S	Suitabili	ty for C	onser	ation I	Planting	s by M	lajor L	.and	Res	ourc	e Are	eas v	withir	n Col	orac	lo				Up	olands		Lov	lands	3 2)													<u>.</u> .
					Min.	Max.	Min FFP			Soil				Maj	or La	and Re	esourc	e Are	ea				opes 15%		lopes 15%	Saline	Non-Saline	Alkaline	Jor	Tolerance	rance	Tolerance	rence	Tolerance	=======================================		Trap Strips	aterways	Hayland		Soil Salinity Mgm't - Nonirr. Wastewater Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Heigh	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	D 34A	D 34B	D 36	E 47	E 48B		E 51 G 67A	G 67B north	G 67B south G 69	H 70A	H 72 H 77A		Soil .	Textu	res L C	Moist	Moist	Dry	Seedling Vigor	p   o		Drought Tole Fire Toleran	Salinity Tolerer	Shade Toler	Fertility requirement Water use	Critical Areas	Cross Wind Trap Filter Strips	Srassed Waterw	Pasture and	Riparian Areas	Soil Salinity Nastewater
Festuca thurberi (Thurber's fescue)	NCB	8)	24 in		16	24	70	6,500	12,200	6.0-8.	1=		X		x x			U		1			x x	×	x x					3 2			2	1 N		. X			x >		<i>" _</i>
Festuca trachyphylla (hard fescue - Durar)	ICB	8)	15 in		14	26	70	6,500	14,000	4.5-8.	0 X		х	x :	x x	X							x x	×	x x			х	3 3	3 1	1	3 3	2	3 L	L	. X		х	х		
Fraxinus pensylvanicus (green ash)	NT	5)	35 ft	FACW	10	20	120	3,500	5,700	5.0-8.0	0					х	Х	х			х			х	х		х	х	3 3	3 3	5	3 3	1	3 N	м м	1				х	
Gaillardia aristata (common blanketflower)	NF	8)	24 in		14	30	90	4,900	9,400	5.5-7.	9			x :	x x	X								х	х			х	3 2	2 1	3	3 2	2	1 I	L M	ıx			>	<	
Geranium richardsonii (Richard's geranium)	NF	5) 8)	36 in	FACU	10	30	70	4,200	12,000	6.1-7.	6 X	X	( x	X Z	x x	X	Х								х		х		3 2	2 3	3	2 3	1	3 F	4 H	1			>	< x	х
Geum macrophyllum perincisum (largeleaf avens)	NSF	6)	24 in	OBL	12	55	90	5,000	10,500	5.0-7.	0		х	]	x x	X													3 3	3 3	3	2 3	1	5 N	м м	1				х	
Glyceria striata (fowl mannagrass)	NS	6)	60 in	OBL	10	60	90	3,500	10,500	4.0-8.0	0 X	X	( x	x :	x x	X	хх	Х	Х		х								3 3	3 5	3	2 2	1	5 N	м м	ı				Х	
Hedysarum boreale (Utah sweetvetch - Timp)	NCL	8)	24 in		12	18	90	4,000	9,500	5.6-8.	2 X	X	X	x 2	x x	X	Х	Х	Х			х	X X	x x	х		X	х	3 3	3 2	4	4 4	3	1 L	LL	. X		$\perp$	X	<	
Helianthus maximiliani (Maximilian sunflower - Prairie Gold)	NWF		60 in	FACU	14	25	90	3,500	7,000	6.0-8.	0										х			Х	Х			X	5 3	3 1	3	3 5	2	1 N	м м	1 X			>	(	
Helianthus nutallii (Nuttall's sunflower)	NCSF	4) 5)	6 ft	FACW	12	20	100	4,500	8,000	5.9-7.	5 X	X	X	X 2	x x	X	ХХ	Х	Х							Х	Х		3 3	3 3	2	2 3	3	1 N	м м	1			>	< x	
Hesperostipa comata (needleandthread)	NCB	8)	36 in		10	20	90	3,500	10,100	6.6-8.	4 X	X	X	X 2	x x	X	ХХ	Х	Х		х	Х	х	Х	Х			Х	2 2	2 1	3	5 5	1	1 L	L L	.	Х		X	(	
Heterotheca villosa (hairy false goldenaster)	NF	8)	36 in		10	26	70	4,000	13,000	6.0-7.	5 X	X	X	X 2	x x	X	ХХ	Х	ХХ	X	x x			Х	Х			Х	3 2	2 1	3	3 5	2	1 L	LL	. X		$\perp$	>	(	
Iris missouriensis (Rocky Mountain iris)	NCF	6) 8)	12 in	OBL	24	35	70	7,500	11,000	7.0-8.	5		Х	X 2	x x	X	Х												5 5	5 5	5	2 5	1	3 L	_ H	]				Х	
Juncus balticus (Baltic rush)	NCLS	6)	30 in	OBL	10	20	70	3,400	11,500	6.0-9.	0 X	X	X	X   2	x x	X	ХХ	Х	Х	X	x x								3 2	2 5	2	2 5	5	1 L	_ H	1		$\perp$		Х	
Juncus confusus (Colorado rush)	NCB	5) 8)	12 in	FAC	10	30	70	5,000	12,500	6.0-8.	0 X	X	X	X 2	x x	X											X		2 2	2 5	3	2 5	2	3 N	и н	$\perp \downarrow$	$\perp$	$\perp$		Х	Х
Juncus drummondii (Drummond's rush)	NCB	5) 8)	18 in	FACW	20	55	70	8,400	13,000	5.4-7.	0		Х	X 2	x x		Х										X		3 2	2 3	3	2 5	1	3 L	L M	1		$\perp$		Х	Х
Juncus ensifolius (swordleaf rush)	NCS	4) 5)	24 in	FACW	8	40	80	6,500	9,000	6.0-8.	0		Х	X 2	x x											Х	Х		2 5	5 5	3	2 5	3	3 N	л н	1	$\perp$	$\perp$		Х	Х
Juncus interior (inland rush)	NCB	5) 8)	36 in	FAC	20	55	90	3,500	8,400	5.7-7.	0			х		X	х	Х	Х		X						Х		2 2	2 3	3	2 5	1	3 L	L M	1				Х	

																					Ī	So	ils and	Lan	dscap	e Posi	tion	1)		Sı	uitabi	lity Ra	tings	3)	—	T	Con	serva	ition P	Plantir	ngs
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	Suitabilit	y for C	onser	ation I	Planting	s by M	1ajor L	and	Res	ourc	e Are	eas v	vithir	n Colo	orad	0				Upla	ınds		Low	lands	,													ir.
					Min.	Max.	Min FFP			Soil				Maj	or La	nd Re	esource	e Are	ea			Slo > 1			opes 15%	Saline	Non-Saline	Alkaline	jor	Tolerance	rance	Tolerance	rence	ance	ם בו		Trap Strips	ıterways	Hayland	as	Soil Salinity Mgm't - Nonirr. Wastewater Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Heigh	NWI	Precip inches	Precip	32	Min. Elev	Max Elev	pH Range	D 34A	D 34B	D 36		48A			G 67B north	G 67B south G 69	H 70A H 72	477A		Soil Te	exture	es L C	Moist	Moist	Dry	Seedling Vigor	bic.	CaCO3 Tolerance	Drought Tole Fire Toleran	Salinity Tolerer	Shade Tolerance	Fertillity requ	Critical Areas	Cross Wind Trap Filter Strips	Grassed Waterw	Pasture and	kange Riparian Are	Soil Salinity Mgm't - Wastewater Trtm't S
Juncus longistylis (longstyle rush)	NCS	4) 5)	20 in	FACW	8	40	80	4,500	10,500	6.0-8.	1				ХХ		w в		0 0							X	X		2 3	T	3	2 5			Ť					X	X
Juncus mertensianus (Merten's rush)	NCS	6)	10 in	OBL	10	30	70	4,000	12,000	6.0-8.	0	х			x x	х	х												2 2	2 5	3	2 5	1	3 N	л н					х	
Juncus nodosus (knotted rush)	NCS	6)	24 in	OBL	14	50	110	3,500	7,500	4.0-7.	5 X		Х	х		х	Х	х											3 5	5 3	3	3 3	3	1 N	и м	1				х	
Juncus torreyi (Torry's rush)	NCS	5)	18 in	FACW	14	50	85	3,400	8,000	4.5-6.	5		Х	х		х	x x	х	x x	х	X						х		3 3	3 3	2	2 3	1	1 L	L M					х	
Juniperus communis (common juniper)	NT		10 ft		14	60	70	5,000	11,300	5.5-8.	0 X	x 2	⟨ x	x 2	x x	х	Х							Х	хх			х	2 2	2 1	5	5 2	1	1 l	L L		Х				
Juniperus monosperma (oneseed juniper)	NT		20 ft		8	12	120	4,000	7,600	7.0-8.	5 X	x 2	< x	х		х	Х		хх	х	х			Х	хх			х	3 2	2 1	5	5 1	1	1 L	L L		Х				
Juniperus ostoesperma (Utah juniper)	NT		26 ft		12	20	100	4,300	8,500	6.5-8.	2 X	x 2	< x	х										Х	Х			х	2 2	2 1	5	5 2	2	1 L	- L		Х				
Juniperus scopulorum (rocky mountain juniper)	NT		25 ft		12	26	70	4,000	11,000	5.0-8.	0 X	x 2	< x	x 2	x x	х	хх	х	x x	Х	Х			Х	Х			х	2 2	2 1	5	5 2	2	3 L	L L		Х				
Juniperus virginiana (eastern redcedar)	NT		25 ft	FACU	12	68	120	3,600	6,000	5.0-8.	0						Х	X	x x	х	X			Х	хх			х	2 5	5 2	5	5 2	2	3 L	- L		Х				
Koelaria macrantha (prairie junegrass)	NCB	8)	18 in		16	20	90	3,400	8,000	6.0-8.	0 X		Х	x :	x x	х	Х	х		>				Х	Х			Х	2 2	2 1	5	5 5	1	5 N	1 H	$\coprod$	$\perp$		x 2	х	X
Krascheninnikovia lanata (winterfat - Hatch)	NSh		24 in		8	16	70	3,800	9,500	6.6-8.	3 X	x 2	< x	x 2	x x	х	х	X	хх	ХХ	X				хх	>	Κ	Х	3 3	3 1	5	5 5	3	3 L	- L	. X	$\perp$		,	x	
Leymus angustus (Altai wildrye)	ICB	8) 10)	46 in		14	20	90			5.9-8.	5 X	x 2	⟨ x	х		х	х	х	Х	>					хх	>	<	х	2 2	2 1	3	5 5	5	1 L	- L	$\perp$			х		
Leymus cinerius (basin wildrye - Magnar, Trailhead)	NCB	4) 5) 8)	48 in	FACU	12	20	70	4,600	10,000	5.6-9.	0 X	x :	( X	X   1	x x	X	Х					_			хх	X >	x x	х	3 2	2 3	5	3 5	5	3 F	Н	ıx	хх	<u>:                                    </u>	x :	x x	x x
Leymus racemosus (mammoth wildrye - Volga)	ICS		36 in		12	60	90		9,500	6.0-9.	0 X		Х		x	х	Х					x :	x	Х	Х	)	<	х	5 5	5 1	5	5 3	3	1 N	ММ	1 X	Х				
Leymus triticoides (beardless wildrye - Shoshone)	NCS	4) 5)	36 in	FAC	14	24	90	4,000	9,500	6.6-9.	0		Х		x x	X	хх	Х		>		,	x x		хх	X	x x	х	2 4	4 3	5	5 5	5	1 N	1 L	$\perp \downarrow$	X	(	x :	x x	
Liatris punctata (dotted gayfeather)	NWF	8)	24 in		16	26	120	3,500	8,000	6.0-7.	8		1			X	Х	х	хх	Х	Х			Х	Х			х	3 2	2 1	2	5 5	1	1 N	ММ	1 X	$\perp$		,	x	
Linum perenne (blue flax - Appar)	ICF	8)	30 in		10	18	70	5,200	11,000	5.6-8.	4 X	X   2	⟨ x	X   1	x x	х	х	х	Х					Х	Х			х	5 2	2 1	5	3 2	2	1 L	L M	1 X	$\perp$	$\perp$			
Lolium arundinaceum (tall fescue - Alta, Fawn)	ICB	4) 5) 8) 10)	36 in	FACW	16	55	90	4,800	8,700	5.0-9.	0 X		Х	<b>x</b> 2	X	х	Х	х	x x						x x	X	Κ	Х	4 2	2 3	3	3 5	4	3 N	ММ	1 X	×		Х	Х	

																						Soils	and La	andsca	аре Ро	sition	1)		;	Suitab	ility Ra	tings	3)		$\top$	Con	serva	tion Pl	anting	s
Table 6. Perennial Graminoid, Fort	and V	Voody F	Plant S	uitabili	ty for C	Conserv	vation I	Planting	s by M	lajor L	and	Reso	ource	e Area	as wit	hin C	olora	ado				ι	Jpland	S	Lo	wland	,													<u>.</u>
					Min.	Max.	Min FFP			Soil				Majo	r Land	Resou	ırce A	ırea				Slope > 15%		Slopes < 15%		Alkaline	Alkaline	jor	ad	c i olerance Tolerance	Tolerance	rence	ance	llrement		Trap Strips	aterways	Hayland		Soil Salinity Mgm't - Nonirr. Wastewater Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	34A	34B	36	47 48A		51	G 67A G 67B north	G 67B south	G 69 H 70A	72	H 77A		il Textu		Moist	Dry	Dry	ii)		Anerobic 10 CaCO3 Tole	Drought Tole Fire Toleran	Salinity Tolerer	Shade Tolerand	Fertility requirement Water use	vater use Critical Areas		ે   ≥	Pasture and	Riparian Areas	oil Salinity Mgm't Vastewater Trtm't
Lolium perenne (perennial ryegrass)	ICB	8) 10)	18 in	FACU	16	65	100	4,000	8,000	5.0-8.	0 X		X	хх	) п	(	x x	(	O I	X	I	, -			x x	<u> </u>	(		_	3 3			1 F	Ť	1	0 1	- 10	X	. 12 0	x
Lonicera involucrata (twinberry honeysuckle)	NSh		10 ft	FAC	14	32	70	7,000	11,500	5.5-8.0	0 X	x x	x	хх	X X	x x								x :	x			5	2	2 5	2 3	1	5 N	vi F	1			×		х
Lotus corniculatus (birdsfoot trefoil)	ICL	4) 5) 8) 10)	14 in	FACU	18	65	70		9,000	5.0-7.	7 X	х	x	хх	X	κx	x		х	х			Х	x I	x x	x x	( X	3	1	3 3	3 2	3	1 N	M N	их	Х	K	х	х	
Lupinus argenteus (silvery lupine)	NCF	8)	18 in		10	45	70	4,800	11,500	7.0-8.	0 X	x x	x	хх	X	x x	x x	(	х				Х	x I	х		х	5	5	1 3	3 2	1	1 I	LL	_ X			×		
Medicago sativa (alfalfa)	IL	8) 10)	24 in		16	65	90	4,800	8,500	6.0-8.	5 X	x x	X	хх	X	κ x	x x	x	x x	х	х			x I	х		х	4	2	1 5	4 5	3	1 F	нн	ı x			х		Х
Melica spectabilis (purple oniongrass)	NCS		24 in	UPL	12	30	70	6,500	11,000	6.0-7.	5 X	x x	x	хх	X	<								x I	х		х	2	2	1 2	5 5	2	3 1	L L	-	Х	K	х		
Melilotus officinalis (yellow sweetclover)	ICL	8) 10)	36 in	FACU	12	65	90	4,000	9,000	5.0-8.	0 X	x x	X	хх	X	κx	x x	( x	x x	x	Х			X I	x	х	Х	4	3	2 5	5 5	3	1 F	ни	иχ			х		
Mertensia ciliata (mountain bluebells)	NCF	6) 8)	24 in	OBL	12	65	70	5,400	13,000	6.2-7.	2			х	X	κ x												2	2	3 2	2 3	1	3 F	н н	1				х	
Monarda fistulosa (wildbergamot beebalm)	NSh		36 in		12	24	90	5,000	9,000	6.5-8.	5 X	x x	X	x x	X	κ x							Х	x :	x			3	3	2 3	2 5	1	3 N	мм	1			X		
Muhlenbergia asperifolia (alkali muhly)	NWS	4) 5)	12 in	FACW	12	40	100	3,500	8,000	6.0-8.	4 X	x x	X	х	<b>\</b>	κ x	x x	x	x x	x	Х			x i	x x	>	(	2	3	3 5	2 5	5	5 I	L F	1			X	x	х
Muhlenbergia montana (mountain muhly)	NCB	8)	18 in	UPL	13	30	70	5,500	10,400	6.5-7.	5		х	х	X	κx							Х	х			Х	3	3	1 5	5 2	1	1 l	LN	иχ			X		
Muhlenbergia pungens (sandhill muhly)	NWS		18 in		8	20	120	3,500	8,000	5.0-7.	0				<b>\</b>	x x	x x	x	x x	x	x x	< x	Х	х			X	2	5	1 3	5 5	1	1 L	LL	-			×		
Muhlenbergia racemosa (marsh muhly)	NWS	5)	36 in	FACW	10	35	90	3,500	9,000	5.9-8.	0 X	x x	x	Х	<b>\</b>	Κ	x x	х	x x	x	х		Х	x :	x	×	(	2	3	3 3	2 5	2	5 N	ММ	1	×	×	×	x	
<i>Muhlenbergia wrightii</i> (spike muhly - El Vado)	NCB	5) 8)	24 in	FACU	12	20	90	5,000	9,600	5.8-7.	5	×	X		<b>\</b>	κ							Х	х			Х	3	3	3 5	3 2	1	1 I	L N	ИΧ	Х	×	х	x	
Nassella viridula (green needlegrass - Lodorm)	NCB	8)	24 in		14	24	70	3,500	10,000	6.6-8.	4 X		х	хх	X	κ x	x x	x	x x	x	х			x :	x		х	4	2	2 5	4 3	1	1 1	M L	_ X			х		
Oenothera caespitosa (tufted evening-primrose)	NCF	8)	6 in		7		70	4,100	12,800	6.5-8.	0 X	x x	x	хх	X	κ x	x x	x	x x		х		х	х			х	5	5	1 5	5 3	1	1 I	L L	_ X			×		
Onobrychis viciaefolia (sainfoin - Eski, Remont, Renumex)	ICL	8)	30 in		12	16	90	5,000	8,500	6.0-8.	5 X	x x	x	x x	X	κ x								x I	x		х	5	2	1 5	5 5	2	1 1	M L	_ X			х		
Panicum obtusum (vinemesquite)	NWS	5)	24 in	FACW	8	50	150	3,500	6,000	4.8-7.	0							х	x x		х	< x	Х	х		>	( x	2	5	5 3	2 5	1	3 N	м	1			х	x	X

																					S	oils a	nd La	ndscap	e Pos	ition	1)		Sui	abilit	y Rat	ings 3)	)			Conse	ervatio	n Pla	ıntings	$\neg$
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	uitabilit	ty for C	onserv	ation F	Planting	s by M	lajor L	and	Reso	urce	Area	as with	nin C	olora	ado				Up	lands		Low	lands	,												Ē.	
					Min.	Max.	Min FFP			Soil				Majo	r Land	Resou	rce A	ırea				lopes 15%		lopes 15%	Saline	Non-Saline	Alkaline	jor sad	Tolerance	Tolerance Tolerance	00	rence	irement		S Tran Strips		terways	ומאומייכ	as Mgm't - Nonirr.	0)
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	34A	D 34B D 35	36	E 47 E 48A	E 48B	51	G 67A G 67B north	G 67B south	H 70A	72 77A	s		Textu	res L C	Aoist	Moist	Dry	Seedling Vigor Rate of Spread	Dide	CaCO3 Tole Drought Tole	اوار	Salinity Tolerer Shade Toleran	ertility requirement	Water use	Critical Areas Gross Wind T	ross Wind Trap ilter Strips	Grassed Wa	Range	Riparian Areas Soil Salinity Mgm't	Wastewater Trtm't
Panicum virgatum (switchgrass - Alamo, NE-28, Pathfinder)	NWS	4) 5) 10)	60 in	FAC	12	30	140	3,400	7,800	4.5-7.5				шш	шш	ш	x x			<u>т</u> х				x x	T			3 2			3 5		I H	<u> </u>	x x		X		X	X
Panicum virgatum (switchgrass - Blackwell, Grenville)	NWS	4) 5) 10)	60 in	FAC	12	30	120	3,400	7,800	4.5-7.5	5	хх	х		×		x x	( x )	x x	x x	( X	x x	< x	хх	x :	x x	х	3 2	3	2 3	3 5	3 1	і н	М	х	x x	Х	x x	х	х
Pascopyrum smithii (western wheatgrass - Arriba, Barton)	NCS	4) 5) 10)	20 in	FACU	14	20	90	3,600	10,000	4.5-9.0	X	хх	х	х	х	х	x x	( x )	x x	х	(	x x	<	хх	x z	x x	х	3 4	3	5 5	5 5	3 1	М	М	х	Х	х	< x	х	
Pascopyrum smithii (western wheatgrass - Rosana)	NCS	4) 5) 10)	24 in	FACU	14	20	90	3,600	10,000	4.5-9.0	X	хх	х	x x	х	x						x x	<	хх	x z	x x	х	3 4	3	5 5	5 5	3 1	М	М	х	х	х	x x	х	
Penstemon angustifolius (narrow leaf penstemon)	NCF	8)	36 in		8	35	100	3,500	8,000	7.0-8.5	5		х	Х	×	X	X	( x )	×	Х			Х	хх			х	5 5	1	5 5	5 1	1 1	L	L	х		Ш	х	Ш	
Penstemon strictus (rocky mountain penstemon - Bandera)	NCF	8)	18 in		14	24	70	6,000	11,000	6.0-7.5	5 X		х	хх	хх	X							Х	Х			х	4 3	1	3 3	3 2	2 3	3 L	М	Х			Х		
Penstemon whippleanus (Whipple's penstemon)	NCF	8)	36 in	FACU	13	35	70	8,000	12,500	7.0-8.0	)		х	хх	ХХ	X							Х	Х			х	3 3	1	5 3	3 5	1 3	3 L	М	Х			x		
Phalaris arundinacea (reed canarygrass - Ioreed, Palaton)	NCS	4) 5) 10)	48 in	FACW	18	60	90	4,500	9,000	4.9-8.2	2 X	хх	х	хх	x x	X								ХХ	x 2	x x	х	4 4	5	3 3	3 3	3 1	і н	Н	Х	x x	ХХ	( x	x x	X
Phleum alpinum (alpine timothy)	NCS	5)	16 in	FAC	16	60	70	7,800	13,000	5.0-7.5	5		х	хх	x x	X								хх		Х		3 2	3	2 2	2 5	1 3	м	М	$\perp$	Х	×	x x	X	
Phleum pratense (timothy - Itasco)	ICB	5) 8) 10)	30 in	FACU	18	65	90	4,500	11,500	5.0-7.8	3 X	хх	х	хх	x x	X								хх		Х		3 2	3	5 2	2 3	2 3	м	М	1		<b>\</b>	(	х	
Phragmites australis (common reed)	NWS	5)	10 ft	FACW	12	60	90	3,500	8,900	4.5-8.0	X	хх	х	хх	ХХ		х	( x )	x x	ХХ	(		Х	хх		Х		4 3	5	3 2	2 5	1 1	М	М	×	К	Ш	Х	х	Ш
Picea engelmannii (engelmann spruce)	NT	5)	100 ft	FACU	20	45	70	8,100	12,000	6.0-8.0				хх	ХХ	Х								хх		Х		2 2	3	5 2	2 2	1 3	3 L	М	$\perp$				x	$\perp \downarrow$
Picea pungens (Colorado blue spruce)	NT	5)	100 ft	FAC	18	45	80	6,000	9,500	5.5-7.8	3		х	x x	X X	X				$\perp$			Х	Х		Х	х	2 3	3	5 3	3 2	1 3	М	М	$\downarrow$		$\perp$	$\perp$	X	$\coprod$
Pinus ponderosa (ponderosa pine)	NT		100 ft	FACU	15	25	80	5,400	9,300	5.0-9.0			х	хх	хх	X							Х	Х			х	5 2	1	2 5	5 5	1 1	L	М	$\downarrow$					
Pleuraphis jamesii (galleta grass - Viva)	NWS		18 in		10	18	90	3,600	10,800	6.6-8.4	X	хх	х	хх	ХХ		x x	( x )	x x	X X	( X	x 2	κ x	хх	)	×	х	2 3	1	5 5	5 3	3 1	L	L	$\perp$	Х	×	x x		
Poa alpina (alpine bluegrass - Gruening)	NCS	5)	18 IN	FACU	20	55	70	8,100	13,500	5.0-7.2	2			Х	ХХ	X					Х	Х	Х	Х		Х	х	5 2	3	2 3	3 5	1 3	; L	L	Х	Х		Х	x	
Poa compressa (Canada bluegrass - Reubens, Talon)	ICS		24 in	FACU	15	45	80	3,500	9,500	5.0-7.0			х	хх	ХХ	X	х	: ;	×	Х	Х	x 2	κ x	хх	)	×	х	3 2	1	3 3	3 5	3 5	; L	М	4		<b> </b>			$\perp \perp$
Poa fendleriana (muttongrass)	NCB	8)	24 in	UPL	10	18	70	4,000	13,900	6.0-8.0	X	x x	х	х	XX	X	x x						Х	x x			Х	2 2	1	5 5	5 2	1 1	L	L	$\perp$	$oxed{oxed}$	×	( X		

																						Sc	oils ar	nd Lai	ndscap	e Pos	ition	1)		Su	iitabi	lity Ra	itings 3	3)		Τ	Con	serva	tion P	lantin	gs
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	uitabilit	y for C	Conserv	ation F	Planting	s by M	lajor L	and.	Reso	ourc	e Are	as v	withir	n Colo	orad	О				Up	ands		Low	lands	,													ir.
					Min.	Max.	Min FFP			Soil				Majo	or La	nd Re	esource	e Are	ea				opes 15%		opes 15%	Saline	Non-Saline	Alkaline	jor	Tolerance	Tolerance	Tolerance	rence	Tolerance	מוֹמוֹי		Trap Strips	aterways	Hayland	as	Soil Salinity Mgm't - Nonirr. Wastewater Trtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	D 34A	D 34B	D 36	: 47 : 48A	E 48B		E 51 G 67A	G 67B north	G 67B south G 69	H 70A	H 77A		Soil 7	1	es L C	Moist	Moist	Dry	Seedling Vigor	bic.	CaCO3 Tole	Drought Tole Fire Toleran	Salinity Tolerer	Shade Tolerance Fertility requirement	Water use	Critical Areas	Cross Wind Trap Filter Strips	2 ≥	Pasture and	Riparian Are	Soil Salinity Mgm't Wastewater Trtm't
Poa palustris (fowl bluegrass)	NCS	5) 8)	18 in	FACW	18	50	70	4,000	12,000	4.9-7.	1=		Х	ХХ	1	X	ш Ø	Х	0 0								X	f = f	3 3	Ť	3	2 5			M M	Ť	<u> </u>		×		0)   2
Poa pratensis (Kentucky bluegrass)	ICS	5) 10)	18 in	FACU	18	65	70	4,000	12,200	5.0-8.	4 X	х	X	х	( x	х	хх	х	Х	;	×		x x		хх		х		4 4	1 3	5	2 5	1	3 H	4 H				х	х	х
Poa secunda (big bluegrass - Sherman)	NCB	8) 10)	36 in	FACU	15	22	70	5,000	10,000	6.0-8.	0		Х	х	( x	X								х	x x			х	3 2	2 2	5	3 2	1	3 N	м м	1 X			х	<	
Poa secunda (Canby/Sandberg bluegrass)	NCB	8)	12 in	FACU	12	22	70	4,500	13,000	6.0-8.	0		Х	хх	( x	X								х	x x	x 2	x x	х	2 2	2 3	5	5 2	3	3 N	м м		×	×	х	< x	
Populus angustifolia (narrowleaf cottonwood)	NT	5)	60 ft	FACW	16	35	90	5,000	9,500	6.0-7.	5 X	x x	X	хх	( x	X	Х							х	Х	x :	x x	х	2 2	2 5	5	5 3	3	1 L	_ Н	$\coprod$	$\perp$	$\perp$		х	х
Populus deltoides monilifera (plains cottonwood)	NT	5)	80 ft	FACW	20	55	100	3,500	6,500	4.6-6.	5					х	Х	Х	хх	X   3	x x			Х	хх		х	х	5 5	5 5	3	3 5	1	1 N	л н	$\perp \perp$	$\perp$	$\perp$		х	х
Populus fremontii (freemont cottonwood)	NT	5)	50 ft	FACW	12	24	120	4,000	7,000	6.0-8.	0 X	X X	X	Х		Х								Х	хх	x 2	x x	х	3 3	3 5	3	5 3	3	1 N	1 Н					х	х
Populus tremuloides (quaking aspen)	NT		40 ft		16	40	70	6,000	11,700	6.0-9.	0		Х	ХХ	( X	X	Х							Х	хх	2	×	Х	2 3	3 2	5	3 5	3	1 N	1 Н	$\perp$	$\perp$	$\perp$			х
Prunus americana (American plum)	NT		24 ft	FACU	16	40	100	3,500	6,000	5.0-7.	0					Х	Х	Х	ХХ	x 2	x x			Х	Х				5 2	2 2	5	1 3	2	1 N	м м		_				
Prunus pumila besseyi (bessey sandcherry)	NSh		36 in		12	24	100	3,500	6,500	5.3-7.	5					Х	Х	Х	ХХ	X 2	x x			Х					5 2	2 1	5	2 3	2	1 N	м м		_		×	<	
Prunus virginiana (chokecherry)	NSh	4) 5)	15 ft	FACU	10	65	90	4,400	9,300	5.2-8.	4 X	ХХ	X	ХХ	( X	X	ХХ	Х	ХХ	X 2	x x			Х	ХХ	X 2	x x	Х	3 2	2 3	5	5 5	3	1 N	м м	1 X	_		×	κ x	
Psathyrostachys juncea (Russian wildrye - Vinall, Swift, Bozoisky)	ICB	8) 10)	24 in	FACU	10	30	100	5,500	7,000	6.6-9.	0 X	XX	X	X X	( X	X	Х	Х	ХХ				x x		ХХ	X 2	x x	Х	4 1	3	2	5 3	3	3 L	- L	. X	X	×	Х		
Pseudorogneria spicata inermis (beardless wheatgrass - Whitmar)	NCB	8)	20 in		10	35	90	4,500	8,500	6.4-8.	4 X		Х	X X	( X	X	Х							Х	ХХ			Х	2 2	2 2	5	5 2	2	1 L	_ L	$\perp \downarrow$	_	$\perp$	ХХ	<	
Pseudorogneria spicata spicata (bluebunch wheatgrass - Goldar)	NCB	8)	24 in	UPL	10	35	90	5,000	9,500	6.6-8.	4 X	XX				$\perp \downarrow$								Х				Х	3 2	2 1	5	5 2	2	1 L	LL	. X	$\perp$		ХХ	<b>(</b>	
Pseudotsuga menziesii glauca (rocky mountain douglas fir)	NT		100 ft		12	24	65	6,000	11,000	5.9-7.	2		Х		( X	X	Х							Х	Х			Х	3 2	2 2	3	5 3	1	1 N	ММ	$\Box$	$\perp$	$\perp$			<del>                                     </del>
Puccinellia nuttalliana (Nuttall's alkaligrass)	NCS	6)	12 in	OBL	24	45	90	4,500	9,500	6.5-8.	5		Х	X X	( X	X	Х	Х											2 3	5	3	2 5	5	1 L	L M	$\Box$	$\downarrow$	$\perp$	×	K X	
Purshia tridentata (antelope bitterbrush - Maybell)	NSh		4 ft		12	36	90	5,000	9,000	5.6-8.	4 X	XX	X	X X	( X	X								Х				Х	3 2	2 2	5	5 1	1	3 N		. X	$\downarrow$	$\perp$	×	<b>(</b>	
Quercus gambelii (gambel oak)	NT		10 ft		10	24	90	4,000	8,500	6.5-8.	0 X	X	X	XX	X	X								Х	Х				2 3	3 1	5	2 5	1	1 N	1 L						

																					,	Soils a	nd La	ndsca	oe Pos	ition	1)		Su	uitabi	ility Ra	tings	3)		Г	Cons	ervati	on Pla	antings	;
Table 6. Perennial Graminoid, Fort	and V	Voody F	Plant S	uitabili	ty for C	onser	ation F	Planting	s by M	lajor L	and	Resc	urce	e Area	as wit	hin C	olora	ado				Up	olands	3	Low	lands	3 2)													<u>:</u>
					Min.	Max.	Min FFP			Soil				Majo	r Land	Resou	ırce A	Area				Slopes > 15%		Slopes : 15%	Saline	Non-Saline	Alkaline	Jor	Tolerance	Tolerance	Tolerance	rence	ance	ם בו בו		Trap Strips	terways	Hayland	as Mam't - Nonirr	י ט
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip	Precip	32	Min. Elev	Max Elev	pH Range	34A	D 34B D 35	D 36	E 47 E 48A	48B	E 51	G 67A	G 67B south	G 69 H 70A	72	8// S		Textu	res L C	Moist	DI y Moist		Seedling Vigor	bic S	CaCO3 Tole	_ 0	Salinity Toler	Shade Tolerance Fertility requirement	rerunty requ Water use	Critical Areas	Cross Wind Trap Filter Strips	l sed	Pasture and Range	Riparian Areas	/astewater
Ratibida columnifera (upright prairie coneflower)	NWF	8)	3 ft		16	40	90	3,500	7,000	5.9-7.0			Ω	шш	ш	ш	X >				X		1	x x	1-1-	2 ≥			2 1		3 5			M M		3 1	0 0	X	2 0	)   5
Rhus trilobata (skunkbush sumac - Bighorn)	NSh		4 ft	NI	8	20	90	3,500	9,000	6.5-8.2	2 X	хх	X	х	,	x x	x >	( X	x x	X I	х		х	х			х	2 2	2 1	2	3 3	2	3 L	- L				х		
Ribes aureum (golden currant)	NSh	5)	5 ft	FACW	12	20	90	3,500	8,000	6.0-8.0	Х	х	X	Х		x x	x >	x x	x x	x	х			х		х	x	5 5	5 3	5	3 3	1	3 F	i L	х			Х	X	
Ribes cereum (wax currant)	NSh		3 ft	NI	13	35	70	4,000	11,400	6.5-7.5	5 X		х	хх	x x	x x	>	(	x				х	х			х	3 3	3 1	5	5 5	1	1 l	L L	х		Ш	Х		
Ribes montigenum (gooseberry currant)	NSh		2 ft		10	35	70	7,500	11,500	7.0-8.0	)			х	x x	x x							Х	Х			х	5 5	5 1	3	5 3	1	3 N	М	х		Ш	Х		
Rosa woodsii (woods rose)	NSh		3 ft	FAC	12	40	70	3,500	11,700	5.0-8.0	х	хх	X	хх	x x	x x	X >	(		х			Х	Х			х	3 5	5 1	2	3 5	1	3 N	М	х		Ш	Х		
Rubus parviflorus (thimbleberry)	NSh		4 ft	FAC	20	45	70	7,000	10,000	4.8-7.2	2			х	Х									х			х	2 3	3 2	5	3 5	1	3 N	л н			Ш	Х	)	<
Sagittaria latifolia (arrowhead)	NF	6) 8)	18 in	OBL	14	50	95	3,500	6,000	4.7-8.6	6				)	X	X >	(		х								ŧ	5 5	5	1 1	3	1 l	L H			Ш		х	
Salix amygdaloides (peachleaf willow)	NT	5)	30 ft	FACW	24	60	80	3,500	9,500	6.0-8.0	)				x x	x x	X >	( X	x x	X	х		Х	Х		х		2 3	3 3	3	2 5	1	1 N	л н			Ш		X >	<
Salix bebbiana (Bebb willow)	NT	5)	10 ft	FACW	20	60	80	5,000	9,600	5.5-7.5	5		х	хх	x x	x x							Х	Х		х		2 2	2 3	2	1 5	1	1 N	л н			Ш		X >	<
Salix boothii (Booth's willow)	NSh	6)	10 ft	OBL	55	125	70	5,300	10,500	5.5-8.0	)			Х	Х								Х	х		х		3 5	5 3	3	2 3	1	1 L	_ Н			Ш		х	
Salix drummondiana (Drummond's willow)	NSh	5)	12 ft	FACW	16	40	70	7,500	11,100	5.2-7.4	4 X			хх	Х								Х	x x		х		2 2	2 3	3	2 5	1	3 N	л н				Х	( X )	<
Salix exigua (sandbar willow)	NT	6)	15 ft	OBL	20	30	80	5,000	9,000	6.0-8.5	5 X		х	хх	x 2	x x	x >	( X	x x	X .	х							3 3	3 5	5	3 5	2	1 L	_ H			Ш		х	
Salix geyeriana (Geyer's willow)	NT	5)	15 ft	FACW	19	69	70	5,000	11,800	6.5-7.5	5			Х	Х									x x		х		5 5	5 3	2	1 5	1	1 l	_ H			Ш		X	<
Salix planifolia (planeleaf willow)	NT	6)	5 ft	OBL	18	60	70	7,000	13,000	4.5-6.0	)			хх	x :	X												2 2	2 3	1	2 5	1	1 l	L M			$\coprod$		х	Ш
Salix scouleriana (Scouler's willow)	NT	5)	35 ft	FAC	11	40	70	6,500	11,000	6.5-8.0	х	Х	х	хх	x x	X							Х	x x		х	х	2 2	2 3	5	3 5	2	3 L	_ H					х	Ш
Sambucus nigra cerulea (blue elderberry)	NSh	5)	10 ft	FACU	10	60	80	5,500	8,500	4.9-7.5	5 X	хх	X	Х	)	X	X	( X	x				Х	Х		х	х	5 3	3 3	3	5 3	2	1 l	LL	х			Х	X	Ш
Sanguisorba minor (small burnet - Delar)	NCF	8)	16 in	FACU	12	25	90	4,200	6,000	6.0-8.0	Х		х	Х									Х	х				3 3	3 2	3	2 5	3	3 L	LM				х		

																						Soils	and La	andso	ape P	osition	1)		S	uitab	ility Ra	atings	3)	$\neg$	(	Conse	rvatior	n Plantings	$\neg$
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	uitabili	ity for (	Conser	vation l	Planting	gs by N	∕lajor l	and	Reso	ource	e Are	as w	ithin	Colo	rado				U	pland	s	Lo	wland	ds 2)							$\Box$				nirr.	s
					Min.	Max.	Min FFP			Soil				Major	Land	d Reso	ource A	Area				Slopes > 15%		Slope: < 15%	Saline	Alkaline Non-	Saline Alkaline	gor	sad	erance	erance	rence	rance	:	Tran String	гар	aterways Hayland	Range Riparian Areas Soil Salinity Mgm't - Nonirr.	Trtm't Strip
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip		32	Min. Elev	Max Elev	pH Range	D 34A	D 35	36	E 47 E 48A	E 48B	E 49 E 51	G 67A	67B	G 69 H 70A	H 72	H 77A	Soil	Text		O Moist	Dry	Moist	Seedling Vigor	Rate of Spread Anerobic Tolerance	CaCO3 Tolerance	Drought Tolerance Fire Tolerance	Salinity Tolerence	Shade Tolera Fertility requir	Water use	Critical Areas	Cross wind Filter Strips	Grassed Waterways Pasture and Hayland	Range Riparian Areas Soil Salinity Mgr	Vastewater
Schizachyrium scoparium (little bluestem - Pastura)	NWB	8) 10)	24 in	FACU	12	40	90	3,500	9,500	5.6-8.				X		Х		( X				x x			X		X		2 2	Ť	5 3		1 L	. L	х		хх		<u>&gt;</u>
Schizachyrium scoparium (little bluestem - Aldous, Camper, Cimarron, Blaze)	NWB	8) 10) 11)	24 in	FACU	12	40	90	3,500	9,500	5.6-8.	1						>	x x	x x	x	х	x x	x x	х	х		х	4	2 2	5	5 3	1	1 L	. L	х		x x	x	1
Schoenoplectus acutus (hardstem bulrush)	NS	6)	9 ft	OBL	12	60	80	3,500	9,000	5.2-8.	5 X	x x	х	x x	х	x x	x x	x x	x x	X	Х							3	5 5	3	3 3	3	1 N	ин				x	
Schoenoplectus maritimus (alkali bulrush)	NS	6)	36 in	OBL	24	60	80	4,000	9,500	4.0-9.	х		х	х		x x	x x	x x	х	(	Х							3	3 5	3	2 3	5	1 L	. М				x	
Schoenoplectus pungens pungens (common threesquare)	NS	6)	48 in	OBL	12	60	80	3,800	9,300	5.7-7.	5 X	x X	х	х	х	хх	x >	x x	х	Х	Х							3	5 5	3	2 3	3	1 N	и н				х	
Schoenoplectus tabernaemontani (softstem bulrush)	NS	6)	6 ft	OBL	18	55	80	3,500	8,000	5.4-7.	5 X		x	х		x x	x x	x x	x x	X	Х							2	5 5	3	1 5	3	1 L	. н				x	
Scirpus microcarpus (small fruited bulrush)	NS	6)	3 ft	OBL	12	38	80	4,500	8,600	5.4-7.	4 X	x x	x	х	х	x x	x x	<	х									2	5 5	2	1 5	1	1 L	. M				x	
Scirpus pallidus (pale bulrush)	NS	6)	5 ft	OBL	16	28	80	3,500	6,500	5.3-7.	2 X		х	Х		Х	x x	x x	x x	(	Х							2	2 5	2	2 5	1	1 L	. M				x	
Shepherdia argentea (silver buffaloberry)	NLSh		12 ft	FACU	12	20	110	3,800	7,500	5.3-8.	) X	x x	х	Х									Х	x	Х	x Z	x x	3	5 3	5	5 3	5	3 L	. M	Х			x x	
Shepherdia canadensis (russet buffaloberry)	NLSh		6 ft	UPL	15	30	70	7,500	11,000	5.3-8.	D			Х	х	Х							х	x			х	3	5 2	5	5 3	1	3 L	. M	Х			х	
Sorghastrum nutans (yellow indiangrass - Cheyenne, Holt,	NWS	5) 10)	55 in	FACW	16	30	130	3,500	6,800	4.5-8.	D					Х	x >	< x	х	X	Х		х	х	Х	x Z	x x	3	2 3	5	3 5	3	3 H	НМ	Х	Х	X	x x	Х
Sparganium eurycarpum (giant bur-reed)	NS	6)	48 in	OBL	10	50	95	3,400	7,500	5.0-8.	5					x x	x x	<		х								5	5 5	3	1 1	3	3 L	. Н				x	
Spartina pectinata (prairie cordgrass)	NWS	4) 5)	60 in	FACW	18	35	110	3,500	7,000	6.0-8.	5					Х	x >	x x	х	X	Х		х	x	Х	2	X	3	5 5	3	2 5	3	1 N	ин			x	x x x	ĺ
Sphaeralcea coccinea (scarlet globemallow)	NF	8)	12 in		10	35	90	3,500	9,000	7.0-7.	5 X	x x	x	x x	х	x x	x x	x x	х	X	Х		х	x			х	5	5 1	5	5 3	2	1 L	. L	Х			x	
Sporobolus airoides (alkali sacaton - Salado)	NWB	4) 5) 7) 8) 10)	24 in	FAC	10	20	110	3,400	8,000	6.6-9.	) X	x	х	x x		x x	x x	×	хх	X	х			х	хх	x Z	x x	3	2 3	5	3 3	5	1 M	I L	х	х	x x	x x	
Sporobolus cryptandrus (sand dropseed)	NWB		20 IN	FACU	10	16	150	3,500	9,400	6.6-8.	) X	x	х	x x	х	хх	x x	x x	х	Χ	Х		Х		Х	x :	x x	3	5 3	3	5 3	3	1 L	. L	х	х		x x	L
Symphoricarpus albus (common snowberry)	NCSh		4 ft	FACU	12	45	90	5,500	7,900	6.0-7.	зх		х	х		Х							Х	х	хх	x :	x x	3	3 3	3	5 5	3	3 N	1 M	х			x x	1
Symphoricarpus occidentalis (western snowberry)	NCSh	5)	3 ft	FAC	12	45	70	3,500	10,000	6.6-8.	х			х	х	Х	x >	<		х				х		)	x x	3	3 3	3	5 5	2	3 M	ı L	х			x x	

																						So	ls and	Land	scap	e Posit	ion 1	)		Sı	uitabil	lity R	ating	s 3)			Cor	nserva	ation	Plant	ings	
Table 6. Perennial Graminoid, Forb	and V	Voody F	Plant S	uitabilit	ty for C	onserv	ation F	Planting	gs by M	lajor L	and F	Reso	urce	Area	as wi	thin	Colo	ado			Ī		Upla	ınds		Lowl	ands 2	,												П	ï.	,
					Min.	Max.	Min FFP			Soil				Majo	r Land	d Res	ource	Area				Slo > 1	pes 5%	Slop < 1		Saline Alkaline	Non-Saline	Alkaline	gor	Tolerance	rance	erance	rence	ance	requirement ise	S	Trap Strips	aterways	Hayland		Mgm't - Nonirr.	Irtm't Strips
Genus species (common name - Cultivar)	Notes		Mature Height	NWI	Precip		32	Min. Elev	Max Elev	pH Range	34A	35	36	4, 48A	48B	49	67A	67B north 67B south	6 69	72	77A		Soil Te	exture	s _ C	oist		Dry	בן כ	big	CaCO3 Tolerance	Drought Tolerance	Fire Tolerance Salinity Tolerei	Shade Tolerance	ertility requ	Critical Areas	ross Wind	Filter Strips Grassed Wa	asture and	ange	Soil Salinity Mgm't - N	astewarer
Symphoricarpus oreophilus (mountain snowberry)	NCSh		3 ft	FACU	12	40	70	5,500	10,500	5.2-8.2								<u>o</u> <u>o</u>	(O)	<u> </u>	I	5 1	-   0	x >	(	∑ □	X						5 2			- X	0 1	<u> </u>	<u>a</u> .	X >		۸.
Thinopyrum intermedium (intermediate wheatgrass - Amur)	ICS	10)	30 in		15	28	90	3,500	9,000	5.6-8.	5 X	x x	X	x x	х	хх	X	хх	x :	< x	х	,	< x	>	( X		х	Х	5 3	3 3	5	3	5 2	1	ММ	1 X		хх	X			
Thinopyrum intermedium (intermediate wheatgrass - Tegmar, Oahe)	ICS	10)	30 in		15	28	90	3,500	9,000	5.6-8.	5		X	x x	х	х						)	κ x	>	( X		х	Х	5 3	3 3	5	3	5 2	1	ММ	1 X	:	хх	X			
Thinopyrum intermedium (pubescent wheatgrass - Luna, Manska)	ICS	10)	24 in		14	30	90	3,500	9,000	5.6-8.4	4 X	x x	X	x x	х	хх	X	хх	x z	< x	х	x :	<	X	(		х	Х	5 3	3 3	5	4	5 2	1	M L	_ X		хх	X			
Thinopyrum ponticum (tall wheatgrass - Jose)	ICB	4) 5) 7) 8) 10)	48 in		16	28	90	4,800	9,000	6.6-10	) X	x x	X	x x	х	х	X	х	x z	< x	х			>	( X	х	X	Х	4	3	5	3	3 5	1	ММ	1 X	x :	хх	x	:	x	
Thinopyrum ponticum (tall wheatgrass - Largo)	ICB	4) 5) 7) 8) 10)	48 in		16	28	90	4,800	9,000	6.6-10	) X	x x	X	х	х	х	X	х		х				>	( X	х	X	Х	4	3	5	3	3 5	1	мм	1 X	<b>x</b> :	хх	X	:	x	
Trifolium fragiferum (strawberry clover)	IL	4) 5) 7) 8) 10)	6 in	FACW	14	30	110	4,500	5,500	6.0-8.4	4 X	x x	X	x			х	х	x z	<	х			>	(	Х	х		2 3	3 5	3	2	5 3	1	МН	1			х	;	хх	
Trifolium hybridum (alsike clover)	ICSL	5) 10)	12 in	FAC	14	60	70	4,500	10,300	6.0-7.	5 X	x x	X	х	х	х	X	х	x Z	< x	х			>	( X	Х	х		4 4	1 5	3	2	2 3	1	мм	1			х	;	x	
Trifolium pratense (red clover)	IL	8) 10)	24 in	FACU	12	30	70	4,500	10,000	6.0-7.	5 X	x x	X	x x	х	х	X	х	x z	<	х			X	( X				5 2	2 1	3	2	3 1	1	ММ	1			х			
Trifolium repens (white clover - Ladino)	ICL	5) 8) 10)	8 in	FACU	14	70	70	4,800	11,100	6.0-7.	5 X	x x	Х	x x	х	x x	X	Х	х					>	( X		х		2 4	1 3	3	2	5 1	3	ММ	1			х	;	x	
Typha latifolia (broadleaf cattail)	NS	6)	120 in	OBL	60	200	100	3,600	7,600	5.5-7.	5 X	x x	X	x		x x	X	x x	x :	< x	х								ţ	5 5	3	1	5 2	3	МН	1				)	x	
Vicia americana (American vetch)	NCSL		14 in	FAC	9	50	70	3,500	10,500	5.9-7.2	2 X	x	X	x	х	х	X	х	x :	<	х	x :	<	X	(			Х	2 2	2 1	2	5	3 2	1	H L				х	х		

Notes: I = introduced; N = native; C = cool season; W = warm season; B = bunchgrass; S = sodformer; F = forb; L = legume; T = tree; Sh = shrub; NWI = National Wetlands Indicator (OBL = Obligate Wetland, FACW = Facultative Wetland, FAC = Facultative Wetland, FAC = Facultative Wetland, FAC = Facultative Upland, UPL = Obligate Upland); FFP = Freeze Free Period; 1) Soils and Landscape Positions are general (S = sandy soils, L = loamy soils, C = clayey soils); 2) Low lying areas which receive additional water from higher ground; 3) Suitability ratings (1 = poor, 2 = fair, 3 = moderate, 4 = good, 5 = excellent, L = low, M = medium, H = high); 4) Suited for moist, saline lowland sites; 5) Suited for wetland sites; 6) Suited for wetland sites; 7) Will tolerate prolonged periods (3 to 4 days) of inundation; 8) Mix with sod-formers; 9) A bunchgrass which turns sod-former under continuous grazing; 10) Suited for irrigated sites; 11) Acceptable alternatives for eastern Colorado but not the preferred choices.

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