Table 4. Retardance Factors for Grassed Waterways within Colorado

Genus species (common name)	Notes		Soil pH Range	Soil Textures 1)			Major Land Resource Area																Retardance Factors by Average Annual Precipitation Zone (inches) * **						
				S	L	C	D 34A	D 34B	D 35	D 36	E 47	E 48A	E 48B	E 49	E 51	G 67A	G 67B N	G 67B S	G 69	H 70A	H 72	H 77A	8	10	12	14	16	18	20
Agropyron cristatum (crested wheatgrass)	ICB	2) 6)	6.0-8.5		X	X	X	X	X	X	X	X	X	X	X	X	X	X			X		-	D	C	C	B	B	B
Agropyron cristatum X *desertorum* (crested wheatgrass)	ICB	2) 6)	6.0-8.5		X		X	X	X	X	X	X	X	X	X	X	X	X			X		D	D	C	C	B	B	B
Agrostis gigantea (redtop)	ICS	4) 5)	4.5-8.0		X		X			X	X	X	X	X									-	-	-	-	C	C	C
Alopecurus arundinaceus (creeping meadow foxtail)	ICS	3) 4) 5)	5.6-8.4		X	X	X			X		X	X										-	-	-	-	-	C	C
Andropogon gerardii (big bluestem)	NWS	6)	5.6-8.4	X	X							X		X		X	X	X	X	X	X	X	-	-	-	-	C	C	C
Bouteloua curtipendula (sideoats grama)	NWB	2) 6)	5.3-7.8		X	X			X	X				X	X	X	X	X	X	X	X	X	-	-	D	C	C	C	C
Bouteloua gracilis (blue grama)	NWB	2) 6)	6.6-8.4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	D	C	B	B	B
Bromus inermis (smooth brome)	ICS	6)	5.5-8.0	X	X	X	X			X	X	X	X	X		X	X	X	X	X	X	X	-	-	-	D	C	C	B
Buchloe dactyloides (buffalograss)	NWS	6)	6.5-8.0		X	X								X		X	X	X	X	X	X	X	-	E	E	E	D	D	D
Calimovilfa longifolia (prairie sandreed)	NWS	6)	5.6-8.4	X	X									X		X	X	X	X	X	X	X	-	-	D	D	D	D	D
Elymus lanceolatus lanceolatus (thickspike wheatgrass)	NCS	6)	5.5-8.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X		-	C	C	C	C	B	B
Elymus lanceolatus psammophilus (streambank wheatgrass)	NCS	6)	6.6-8.4	X	X	X	X			X		X	X	X	X								-	-	C	C	C	B	B
Festuca trachyphylla (hard fescue)	ICB	2) 6)	4.5-8.0		X	X	X			X	X	X	X	X									-	-	-	D	C	C	C
Lolium arundinaceum (tall fescue)	ICB	2) 3) 4) 6)	5.0-9.0		X	X	X			X	X	X		X		X	X	X	X				-	-	-	-	C	B	B
Pascopyrum smithii (western wheatgrass)	NCS	3) 4) 6)	4.5-9.0		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	D	C	C	B
Phalaris arundinacea (reed canarygrass)	NCS	3) 4) 5)	6.6-9.0		X	X	X			X		X											-	-	-	-	-	B	A
Phleum pratense (timothy)	ICB	2) 4) 5)	5.0-7.8		X	X	X			X		X											-	-	-	-	-	C	C
Poa pratensis (Kentucky bluegrass)	ICS	4) 6)	5.0-8.4		X	X	X			X		X											-	-	-	-	-	C	C
Schizachyrium scoparium (little bluestem)	NWB	2) 6)	5.6-8.4	X	X	X						X		X		X	X	X	X	X	X	X	-	-	D	D	C	C	C
Sporobolus airoides (alkali sacaton)	NWB	2) 3) 4) 5)	6.6-9.0		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	D	D	D	C	C	C
Thinopyrum intermedium (intermediate wheatgrass)	ICS	6)	5.6-8.5		X	X	X			X	X	X	X	X		X	X	X	X	X	X	X	-	-	-	C	C	C	B
Thinopyrum intermedium (pubescent wheatgrass)	ICS	6)	5.6-8.4	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	C	C	B	B	B
Thinopyrum ponticum (tall wheatgrass)	ICB	2) 3) 4) 5)	6.6-10		X	X	X			X		X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	B	B	A
Trifolium fragiferum (strawberry clover)	IL	2) 3) 4) 5)	6.0-8.4		X					X						X	X	X	X	X		X	-	-	-	D	D	D	D
Trifolium pratense (red clover)	IL	2) 6)	6.0-7.5	X	X	X				X		X	X	X		X	X	X	X	X		X	-	-	D	D	D	D	D

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; **6)** Will NOT tolerate prolonged periods (3 to 4 days) of inundation.

***** 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.

****** 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.